Installation and Maintenance

Avaya Business Communications Manager 50
Release 6.0

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New in this release

The following sections detail what's new in *Avaya Business Communications Manager 50 Installation and Maintenance* for release 6.0.

- Features on page 11

Features

Multi-image hard disk drive

Avaya Business Communications Manager 50 (Avaya BCM50) release 6.0 introduces the multi-image hard disk drive field replaceable unit (FRU). This new FRU comes pre-loaded with all available Avaya BCM50 and Avaya BCM450 software releases, simplifying ordering of replacement hard disks. You can install the required software on the BCM system after installing the hard disk, or you can pre-install a different software release for use on a different Avaya BCM system, shortening the installation time on site. For more information about installing a multi-image hard disk drive, see To install a multi-image hard disk on page 205. For more information about preparing a multi-image hard disk drive for a different BCM system, see To prepare a multi-image hard disk drive for Quick Installation on another Avaya BCM system on page 206. For information about LED states associated with the multi-image hard disk drive, see System status LEDs on page 55.

Regulatory information

For regulatory information about the Avaya Business Communications Manager 50 (Avaya BCM50) system:

- "North American regulatory information"
- "International regulatory information" on page 18

North American regulatory information

This Class A device complies with Part 68 and Part 15 of the FCC Rules and ICES-003 Class A Canadian EMI requirements. Operation is subject to the following two conditions (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.



Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Canadian Notice

The Industry Canada designation identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Federal Communications Commission (FCC) Notice

FCC registration number: This telephone equipment complies with Part 68, Rules and Regulations, of the FCC for connection to the Public Switched Telephone Network.

Your connection to the Public Switched Telephone Network must comply with these FCC rules:

- Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the preceding conditions may not prevent degradation of service in some situations. See installation instructions for details.

- Use only an FCC Part 68-compliant Universal Service Order Code (USOC) network interface jack, as specified in the installation instructions, to connect to the Public Switched Telephone Network.
- If the equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of the product may be required. But if advance notice isn't practical, the telephone company will notify you as soon as possible. You will also be advised of your right to file a complaint with the FCC, if you believe it is necessary.

Ringer Equivalence Number (REN)

The REN provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices does not exceed 5.

EMI/EMC (FCC Part 15)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Important safety instructions

The following safety instructions cover the installation and use of the Product. Read carefully and retain for future reference.

Installation

Warning: To avoid electrical shock hazard to personnel or equipment damage observe the following precautions when installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines. The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Use

When using your telephone equipment, basic safety precautions should always be followed to reduce risk of fire, electric shock and injury to persons, including the following:

1. Read and understand all instructions.
2. Follow the instructions marked on the product.
3. Unplug this product (or host equipment) from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
5. Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.
6. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
8. Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
9. Never spill liquid of any kind on the product.
10. To reduce the risk of electric shock do not disassemble this product, but send it to a qualified service person when some service or repair work is required.

11 Unplug this product (or host equipment) from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a When the power supply cord or plug is damaged or frayed.

b If the product has been exposed to rain, water or liquid has been spilled on the product, disconnect and allow the product to dry out to see if it still operates; but do not open up the product.

c If the product housing has been damaged.

d If the product exhibits a distinct change in performance.



Caution: To eliminate the possibility of accidental damage to cords, plugs, jacks, and the telephone, do not use sharp instruments during the assembly procedures.



Warning: Do not insert the plug at the free end of the handset cord directly into a wall or baseboard jack. Such misuse can result in unsafe sound levels or possible damage to the handset.

12 Save these instructions.

Use of a music source

In accordance with U.S. Copyright Law, a license may be required from the American Society of Composers, Authors and Publishers, or similar organization if Radio or TV broadcasts are transmitted through the Music On Hold or Background Music features of this telecommunication system.

Avaya hereby disclaims any liability arising out of the failure to obtain such a license.

Safety

Avaya Business Communications Manager 50 (Avaya BCM50) equipment meets all applicable requirements of both the CSA C22.2 No.60950 and UL 60950 Edition 3.



Danger: Risk of shock.
Read and follow installation instructions carefully.
Ensure the Avaya BCM50 is not powered and that all telephone/data cables are removed prior to opening the BCM50 unit in the field.
If installation of additional hardware and /or servicing is required, disconnect all telephone cable connections prior to unplugging the BCM50 modules.
Ensure the BCM50 is connected to a wall outlet with a third-wire protective earth connection prior to connecting any telecommunications cables to the BCM50 main unit or expansion units.

Caution: Only qualified persons should service the system.
The installation and service of this hardware is to be performed only by service personnel having appropriate training and experience necessary to be aware of hazards to which they are exposed in performing a task and of measures to minimize the danger to themselves or other persons.
Electrical shock hazards from the telecommunication network and AC mains are possible with this equipment. To minimize risk to service personnel and users, the BCM50 system must be connected to an outlet with a third-wire ground.
Service personnel must be alert to the possibility of high leakage currents becoming available on metal system surfaces during power line fault events near network lines. These leakage currents normally safely flow to Protective Earth ground through the power cord. Therefore, it is mandatory that connection to an earthed outlet is performed first and removed last when cabling to the unit. Specifically, operations requiring the unit to be powered down must have the network connections (central office lines) removed first.

Enhanced 911 configuration

Warning:
Local, state and federal requirements for Emergency 911 services support by Customer Premises Equipment vary. Consult your telecommunication service provider regarding compliance with applicable laws and regulations.

Radio-frequency interference

Warning: Equipment generates RF energy.
This equipment generates, uses, and can radiate radio-frequency energy. If not installed and used in accordance with the installation manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of the FCC Rules and with ICES.003, CLASS A Canadian EMI Requirements. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Telecommunication registration

Avaya BCM50 equipment meets all applicable requirements of both Industry Canada CS-03 and US Federal Communications Commission (FCC) Part 68 and has been registered under files Industry Canada 332D-5980A and FCC US: AB6KF15B20705 (key system), US: AB6MF15B20706 (hybrid system), and US: AB6PF15B23740 (PBX system). Connection of the BCM50 telephone system to the nationwide telecommunications network is made through a standard network interface jack that you can order from your local telecommunications company. This type of customer-provided equipment cannot be used on party lines or coin lines.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the preceding conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician.

International regulatory information

CE	The CE Marking on this equipment indicates compliance with the following: This device conforms to Directive 1999/5/EC on Radio Equipment and Telecommunications Terminal Equipment as adopted by the European Parliament And Of The Council.	

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Hereby, Avaya declares that BCM50 units, with Model No. NT9T61XX, NT9T62XX, NT9T64XX, and NT9T65XX, are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Information is subject to change without notice. Avaya reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. This equipment has been tested and found to comply with the European Safety requirements EN 60950 and EMC requirements EN 55022 (Class A) and EN 55024. These EMC limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial and light industrial environment.

Warning:

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. The preceding warning is inserted for regulatory reasons. If any customer believes that they have an interference problem, either because their Avaya product seems to cause interference or suffers from interference, they should contact their distributor immediately. The distributor will assist with a remedy for any problems and, if necessary, will have full support from Avaya.

Safety

Warning:

Only qualified service personnel may install this equipment. The instructions in this manual are intended for use by qualified service personnel only.

Warning: Risk of shock.

Ensure the Avaya BCM50 is unplugged from the power socket and that any telephone or network cables are unplugged before opening the BCM50.

Read and follow installation instructions carefully

Warning: Only qualified persons should service the system.

The installation and service of this hardware is to be performed only by service personnel having appropriate training and experience necessary to be aware of hazards to which they are exposed in performing a task and of measures to minimize the danger to themselves or other persons.

Electrical shock hazards from the telecommunication network and AC mains are possible with this equipment. To minimize risk to service personnel and users, the Avaya BCM50 system must be connected to an outlet with a third-wire Earth.

Service personnel must be alert to the possibility of high leakage currents becoming available on metal system surfaces during power line fault events near network lines. These leakage currents normally safely flow to Protective Earth through the power cord. Therefore, it is mandatory that connection to an earthed outlet is performed first and removed last when cabling to the unit. Specifically, operations requiring the unit to be powered down must have the network connections (exchange lines) removed first.

Additional safety information

The following interfaces (TNV) can be connected to the Public Switched Telephone Network in accordance with Avaya and the local carriers installation requirements:

- BCM50, CSC GATi Ports integrated (Loop Start)
- BCM50, CSC ADSL Port option
- Expansion Unit, Digital Trunk Module (T1/E1/ISDN)
- Expansion Unit, Global Analog Trunk Module 4 and 8 Port (Loop Start)
- Expansion Unit, CTM4/8 (Loop Start)
- Expansion Unit, 4x16 (Loop Start)
- Expansion Unit, G4x16, G8x16 (Loop Start)

- Expansion Unit, BRIM (ST configuration)
- Expansion Unit, ADID4/ADID8 (Direct Inward Dial)
- Expansion Unit R2MFC

The following interfaces are designated as Safety Extra Low Voltage (SELV) and cannot be connected to unprotected plant wiring.

- BCM50, CSC Page Port
- BCM50, CSC Auxiliary Ringer Port
- BCM50, CSC Music On-Hold Port.
- BCM50, CSC Relay Port
- BCM50, CSC USB Port
- BCM50, CSC Ethernet Port including optional Ethernet Hub Ports

ITU standardization compliance

The following list provides voice/data applications and telephony support for Avaya BCM:

- G.711 and G.729AB codecs
- V.27ter, V.29, and V.17 data modem modulation supported (T.38 fax control gateway)
- G3 fax
- T512.1 (Type 1 Receiver DTMF)
- G.168
- H.323
- Q.931

Chapter 1
Getting started

About this guide

The *Installation and Maintenance Guide* describes how to install, configure, and maintain the Avaya Business Communications Manager 50 Release 6.0 (Avaya BCM50 6.0) systems.

The concepts, operations, and tasks described in this guide relate to the hardware of the Avaya BCM50 system. This guide provides task-based information about installing the hardware components and performing basic configuration tasks.

Use Business Element Manager, Startup Profile, and Telset Administration to configure various BCM50 parameters.

In brief, the information in this guide explains:

- installing hardware components
- starting and initializing the system
- replacing components
- testing the system

Audience

The *Installation and Maintenance Guide* is directed to installers who install, configure, and maintain Avaya BCM50 6.0 systems.

To use this guide, you must:

- be an authorized BCM50 6.0 installer or administrator within your organization
- know basic Avaya BCM50 terminology
- be knowledgeable about telephony and IP networking technology

Acronyms

The following is a list of acronyms used in this guide.

Table 1 Acronyms (Sheet 1 of 3)

Acronym	Description
ACU	Audio conference unit
AIS	Alarm indication system
APC	American Power Conversion

Table 1 Acronyms (Sheet 2 of 3)

Acronym	Description
ASM	Analog station module (analog station media bay module)
ATA	Analog terminal adapter
BCM	Avaya Business Communications Manager
BRI	Basic rate interface
BRI CNIC	Basic rate interface compact network interface card
BRIM	Basic rate interface module (basic rate interface media bay module)
CAP	Central answering position
CFA	Carrier failure alarm
CLID	Calling line identification
CNIC	Compact network interface card
CO	Central office
CSU	Channel service unit
CTM	Caller ID trunk module (caller ID trunk media bay module)
DDIM	Digital drop and insert MUX
DECT	Digital enhanced cordless telecommunications
DHCP	Dynamic host configuration protocol
DIMM	Dual in-line memory module
DMC	Digital mobility controller
DSM	Digital station module (digital station media bay module)
DSP	Digital signal processor
DSU	Data service unit
DTE	Data terminal equipment
DTM	Digital trunk module (digital trunk media bay module)
FEM	Fiber expansion module
FRU	Field replaceable unit
GASM	Global analog station module (global analog station media bay module)
GATM	Global analog trunk module (global analog trunk media bay module)
KEM	Key expansion module
KIM	Key indicator module
KRS	Keycode retrieval system
LAN	Local area network
LIU	Line isolation unit
MBM	Media bay module
MSC	Media services card
MWI	Message waiting indication
NIC	Network interface card
ONS	on-premise station

Table 1 Acronyms (Sheet 3 of 3)

Acronym	Description
OSI	Open switch interval
PCI	Peripheral component interface
PEC	Processor expansion card
PSTN	Public switched telephone network
PSU	Power supply unit
QoS	Quality of service
RAI	Remote alarm indication
RAID	Redundant array of independent disks
REN	Ringer equivalence number
RFO	Redundant feature option
RMS	Root mean square
RPS	Redundant power supply
SAPS	Station auxiliary power supply
SELV	Safety extra low voltage
SSD	System status display
UPS	Uninterruptable power supply
USB	Universal serial bus
VMWI	Visual message waiting indicator
VoIP	Voice over Internet protocol
WAN	Wide area network

Symbols and text conventions

These symbols highlight critical information for the Avaya BCM50 6.0 system.



Caution: Alerts you to conditions where you can damage the equipment.



Danger: Alerts you to conditions where you can get an electrical shock.



Warning: Alerts you to conditions where you can cause the system to fail or work improperly.

Note: Alerts you to important information.

Tip: Alerts you to additional information that can help you perform a task.

Security Note: Indicates a point of system security where you can change a default, or where the administrator must decide on the level of security required for the system.



Warning: Alerts you to ground yourself with an antistatic grounding strap before performing the maintenance procedure.



Warning: Alerts you to remove the Avaya BCM50 main unit and expansion unit power cords from the AC outlet before performing any maintenance procedure.

These conventions and symbols represent the Business Series Terminal display and dialpad.

Convention	Example	Used for
Word in a special font (shown in the top line of the display)	Pswd:	Command line prompts on display telephones.
Underlined word in capital letters (shown in the bottom line of a two-line display telephone)	PLAY	Display options on two-line display telephones. Press the button directly below the option on the display to proceed.
Dialpad buttons	#	Buttons you press on the dialpad to select a particular option.

These text conventions are used in this guide to indicate the information described:

Convention	Description
bold Courier text	Indicates command names, options, and text that you must enter. Example: Use the **info** command. Example: Enter **show ip** {**alerts**|**routes**}.
italic text	Indicates book titles.

Convention	Description
`plain Courier text`	Indicates command syntax and system output (for example, prompts and system messages). Example: `Set Trap Monitor Filters`
FEATURE HOLD RELEASE	Indicates that you press the button with the corresponding icon on the telephone you are using.

Related publications

This section provides a list of additional documents referred to in this guide. Two publication types are available: Technical Documents on page 25 and User Guides on page 26.

Technical Documents

System Installation

BCM 6.0 Upgrade Guide (NN40020-401)

Installation Checklist and Quick Start Guide (NN40020-308)

Keycode Installation Guide (NN40010-301)

R2MFC Media Bay Module Installation and Configuration Guide (NN40010-300)

System Programming

Administration Guide (NN40020-600)

Device Configuration Guide (NN40020-300)

Networking Configuration Guide (NN40020-603)

Telset Administration Guide (NN40020-604)

Telephones and Peripherals

Telephony Device Installation Guide (NN40020-309)

Digital Mobility

DECT Deployment and Demonstration Tool

Digital Mobility System Installation and Configuration Guide (NN40010-302)

Avaya 7406 Cordless Handset Installation Guide (NN40110-300)

IP Telephony

WLAN IP Telephony Installation and Configuration Guide (NN40050-301)

CallPilot

CallPilot Manager Set Up and Operation Guide (NN40090-300)

CallPilot Telephone Administration Guide (NN40090-500)

User Guides

There are no references to specific user guides.

Customer service

Visit the Avaya Web site to access the complete range of services and support that Avaya provides. Go to http://www.avaya.com/support or go to one of the pages listed in the following sections.

Navigation

- Getting technical documentation on page 26
- Getting product training on page 26
- Getting help from a distributor or reseller on page 26
- Getting technical support from the Avaya Web site on page 27

Getting technical documentation

To download and print selected technical publications and release notes directly from the Internet, go to http://www.avaya.com/support.

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Ongoing product training is available. For more information or to register, you can access the Web site at http://www.avaya.com/support. From this Web site, you can locate the Training contacts link on the left-hand navigation pane.

Getting help from a distributor or reseller

If you purchased a service contract for your Avaya product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller for assistance.

Getting technical support from the Avaya Web site

The easiest and most effective way to get technical support for Avaya products is from the Avaya Technical Support Web site at http://www.avaya.com/support.

Chapter 2
Introducing the Avaya BCM50 hardware

The Avaya Business Communications Manager 50 Release 6.0 (Avaya BCM50 6.0) provides private network and telephony management capability to small- and medium-sized businesses.

The Avaya BCM50 system:

- integrates voice and data capabilities, IP Telephony gateway functions, and data-routing features into a single telephony system
- provides telephony applications for use in a business environment
- provides a DHCP enhancement feature for the main units with integrated router

For information about the BCM50 hardware components:

- Main units on page 29
- BCM50 Expansion unit and media bay modules on page 35
- Avaya BCM50 hardware on page 46
- Avaya BCM50 components on page 49
- Field-replaceable units on page 53

Main units

The primary hardware component in the Avaya BCM50 system is the main unit. The six BCM50 main units are divided into two series: standard and basic rate interface (BRI). The BRI (or b) series main units include BRI ports that replace the four analog lines (on the RJ-21 telephony connector) on the standard series.

Note: The generic term “main unit,” used throughout this document, refers to any of the six main units (BCM50, BCM50a, BCM50e, BCM50b, BCM50ba, and BCM50be) available for an Avaya BCM50 system.
To indicate features specific to a particular variation of main unit, that variation of main unit is clearly identified (for example, BCM50ba).

- **Standard series**
  - **BCM50 main unit (with Telephony only)**
    The Avaya BCM50 main unit provides call processing and simple data networking functions. It provides connections for 12 digital telephones, 4 (PSTN) lines, 4 analog station ports, and 4 connections for auxiliary equipment (auxiliary ringer, page relay, page output, and music source). The BCM50 main unit has no router, but it has 4 LAN ports: one is the OAM port for technicians, and the other three are for basic LAN connectivity. See the figure BCM50 main unit ports and connectors on page 31.

— **BCM50a main unit (with ADSL router)**
The Avaya BCM50a main unit provides all the same core functionality as the BCM50 main unit, and it has an integrated ADSL router for advanced data applications. For detailed configuration information, see the *Avaya BCM50a Integrated Router Configuration Guide*. See the figure BCM50a main unit ports and connectors on page 31.

— **BCM50e main unit (with Ethernet router)**
The Avaya BCM50e main unit provides all the same core functionality as the BCM50 main unit, and it has an integrated Ethernet router for advanced data applications. For detailed configuration information, see the *Avaya BCM50e Integrated Router Configuration Guide*. See the figure BCM50e main unit ports and connectors on page 31.

- **BRI series (b series)—available only in EMEA and APAC regions**

— **BCM50b main unit**
The Avaya BCM50b main unit provides similar functionality to the BCM50 main unit. The difference is that the BCM50b main unit has two integrated BRI ports replacing the four analog lines on the RJ-21 telephony connector. See the figure BCM50b main unit ports and connectors on page 32.

— **BCM50ba main unit (with ADSL router)**
The Avaya BCM50ba main unit provides similar functionality to the BCM50a main unit. The difference is that the BCM50ba main unit has two integrated BRI ports replacing the four analog lines on the RJ-21 telephony connector. For detailed configuration information, see the *Avaya BCM50a Integrated Router Configuration Guide*. See the figure BCM50ba main unit ports and connectors on page 32.

— **BCM50be main unit (with Ethernet router)**
The Avaya BCM50be main unit provides similar functionality to the BCM50e main unit. The difference is that the BCM50be main unit has two integrated BRI ports replacing the four analog lines on the RJ-21 telephony connector. For detailed configuration information, see the *Avaya BCM50e Integrated Router Configuration Guide*. See the figure BCM50be main unit ports and connectors on page 33.

For descriptions of the main unit ports and connectors, see the table Main unit ports/connectors and descriptions on page 34.

A main unit contains the following field-replaceable units:

- 1 programmed hard disk
- 1 cooling fan
- 1 router card (BCM50a and BCM50e only)

Figure 1 BCM50 main unit ports and connectors

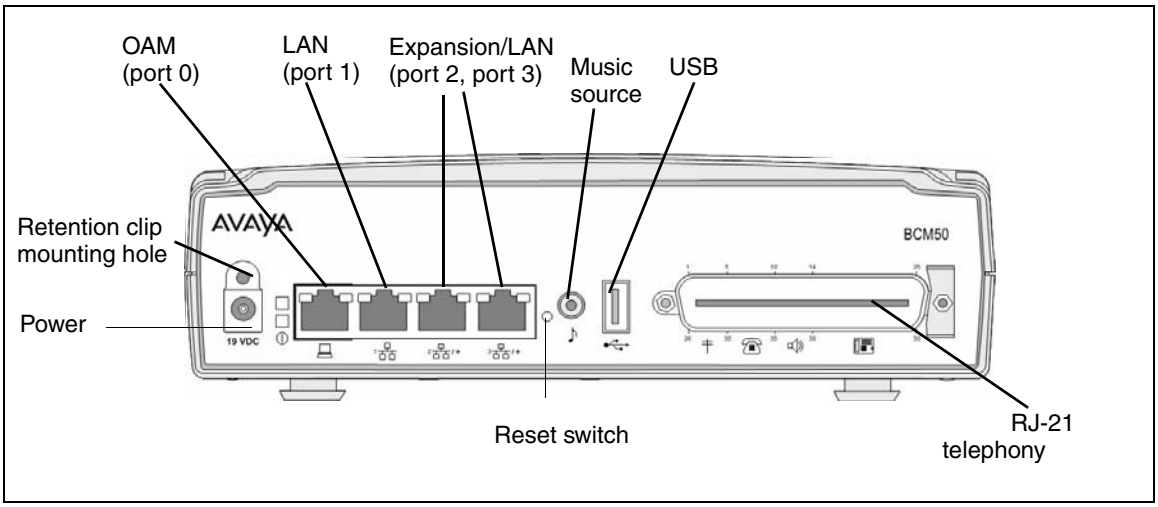


Figure 2 BCM50a main unit ports and connectors

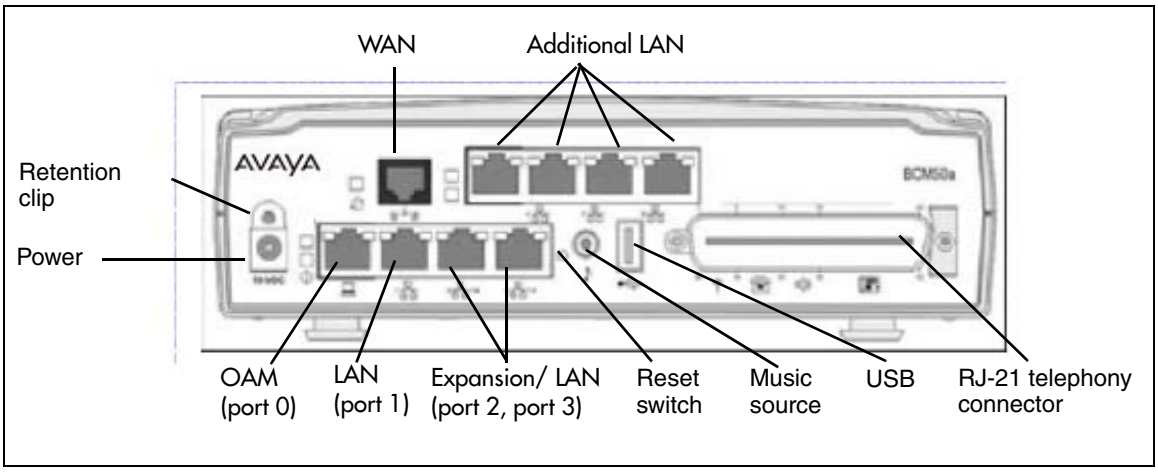


Figure 3 BCM50e main unit ports and connectors

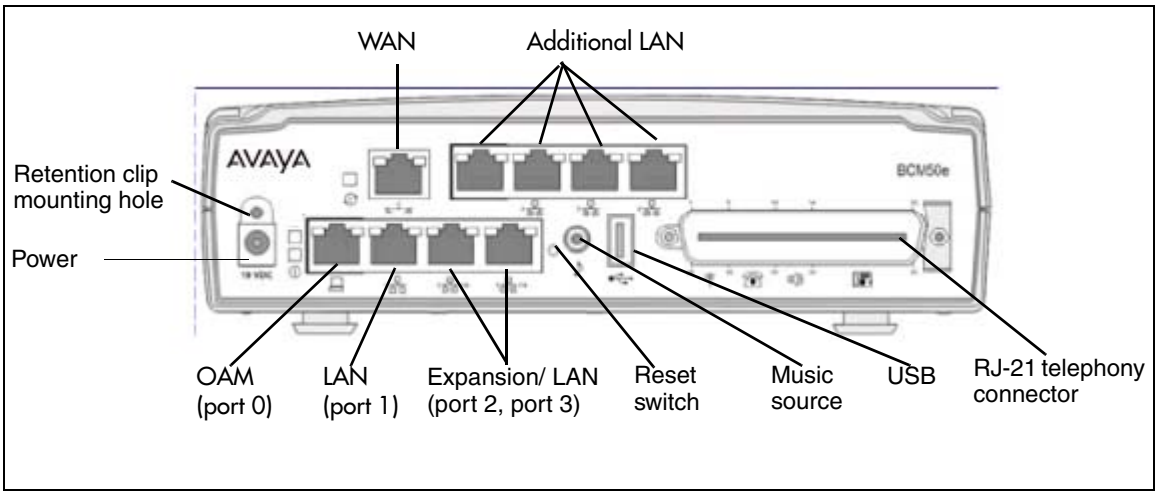


Figure 4 BCM50b main unit ports and connectors

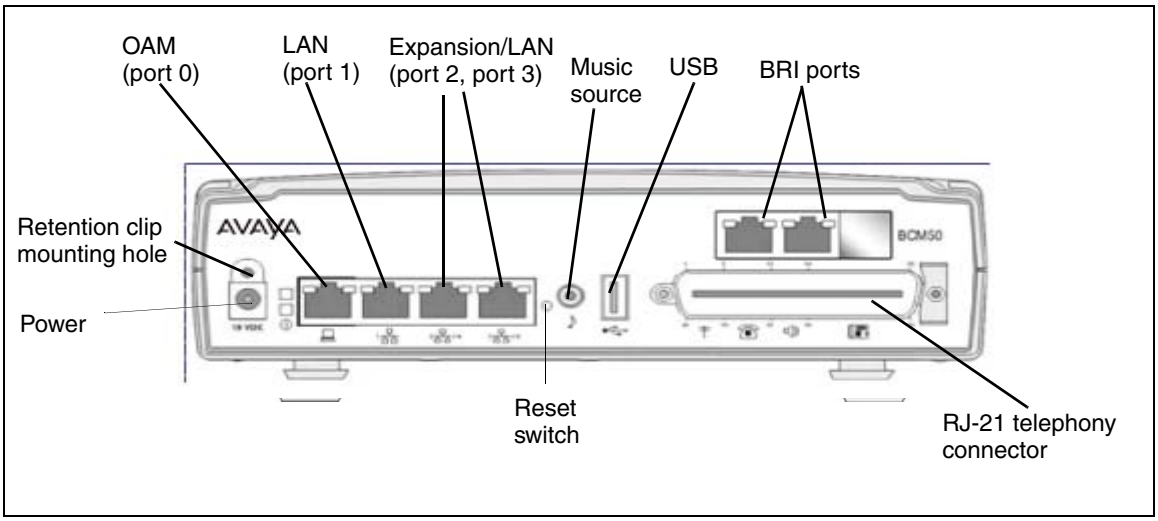


Figure 5 BCM50ba main unit ports and connectors

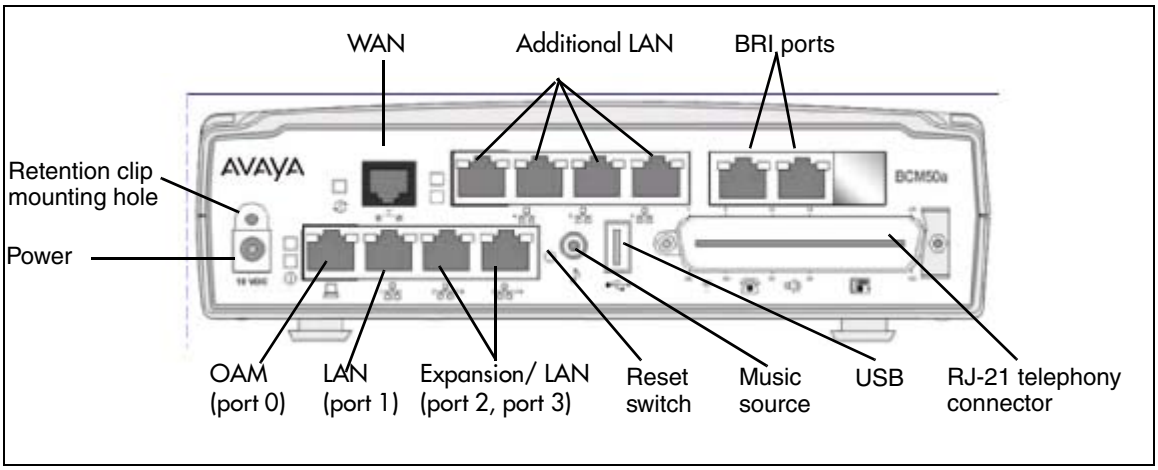


Figure 6 BCM50be main unit ports and connectors

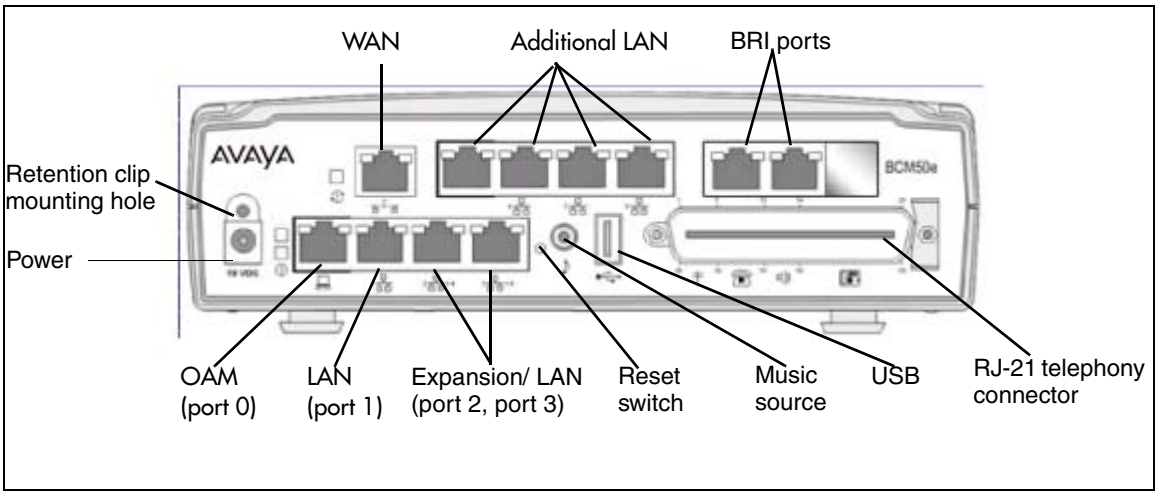


Table 1 Main unit ports/connectors and descriptions

Port/connector	Description
Power connector	A barrel connector jack used to connect the power supply to the main unit.
Retention clip mounting hole	A small hole into which you insert the retention clip. The retention clip secures the power connector to the unit.
OAM port (port 0)	An RJ-45 jack used to connect a computer running administration software, such as Element Manager, to the main unit.
LAN port (port 1)	An RJ-45 jack used to connect the customer LAN to the main unit.
Expansion/LAN ports (ports 2 and 3)	Two RJ-45 jacks used to connect the expansion units to the main unit. The expansion ports can also provide connections to the Ethernet switch internal to the main unit. If the Avaya BCM50 system has no expansion units connected to these ports, you can use the expansion/LAN ports to connect additional devices to the LAN. **Note**: Activate the feature for the expansion ports by selecting this feature when you generate your keycode. If you purchase only one expansion port feature, the expansion port on the left (port 2) is active.
WAN port (BCM50a and BCM50e only).	**For BCM50a:** An RJ-11 jack used to connect the Avaya BCM50a main unit to the ADSL line provided by your Internet service provider (ISP). **For BCM50e**: An RJ-45 jack used to connect the BCM50e to the Ethernet port of a WAN edge device (for example, an external ADSL modem or cable modem). **Note**: This port is not available on the BCM50 main unit.
Additional LAN ports (BCM50a and BCM50e only).	Four RJ-45 jacks that provide connections to the Ethernet switch in the BCM50a and BCM50e main units. You can use these ports to connect additional devices to the LAN. **Note 1**: These ports are not available on the BCM50 main unit. **Note 2**: The BCM50 Release 1 hardware has three additional LAN (RJ-45) ports.
BRI ports (BCM50b series only).	Two RJ-45 jacks that provide connections for BRI trunks from the Public Switched Telephone Network (PSTN). On the BCM50b series main units, the four analog lines on the RJ-21 telephony connector are not available. **Note**: The BRI ports feature is activated by selecting this feature when you generate your keycode. If you do not purchase this feature, the BRI ports are unavailable.
Reset switch	A button to activate the reset feature. Use a long thin tool to press the button. **Warning**: The reset feature erases programming information; use the feature with care.
Music source port	A phono jack used to connect a music source to the main unit. If you use this port, the music source connections on the RJ-21 telephony connector are disabled.
USB port	A USB 1.1-compatible port used to connect a USB storage device or the data interface for an uninterruptable power supply (UPS) to the main unit. The main unit uses the data interface for the UPS to monitor and control the UPS functions. To connect both a USB storage device and a UPS data interface, an industry-standard USB hub (USB 1.1-compatible) is required. **Note**: You must format the USB storage device for the FAT32 file system. If necessary, reformat the USB storage device by plugging it into a USB port on your computer, right-clicking the USB device icon, and selecting FAT32 reformatting. This destroys any data on the USB.
RJ-21 telephony connector	An RJ-21 port used to connect telephony devices to the main unit. The four analog lines on the RJ-21 telephony connector are available only with the Standard series main units. The BRI series main units include onboard BRI ports instead of the analog lines.

Warning: External equipment connected to the auxiliary ringer, page relay, page output, and music-on-hold interfaces must use safety extra low voltage (SELV). All four interfaces are SELV, and the external equipment connected to these interfaces must be SELV. If these interfaces are not SELV, you must use external line isolation units (LIU).

BCM50 Expansion unit and media bay modules

In addition to a main unit, the Avaya Business Communications Manager 50 (Avaya BCM50) system can have up to two Avaya BCM50 expansion units. An expansion unit connects to the main unit and provides additional functionality. For expansion unit port locations and descriptions, see the figure BCM50 expansion unit connections on page 35 and the table BCM50 expansion unit ports, connectors, and descriptions on page 36.

The BCM50 expansion unit accommodates one media bay module (MBM) that connects additional telephony equipment to the BCM50 system. The MBMs connect with external devices to implement various types of voice trunks and stations. For a list of trunk and station MBMs that can be used with your BCM50 system, see the table Trunk MBMs on page 39 and the table Station MBMs on page 41. For a complete list of MBMs with links to additional information, see also the table Media bay modules on page 54.

Ensure that the MBM dip switches are set correctly (see Verifying the media bay module switch settings on page 93).

Figure 7 BCM50 expansion unit connections

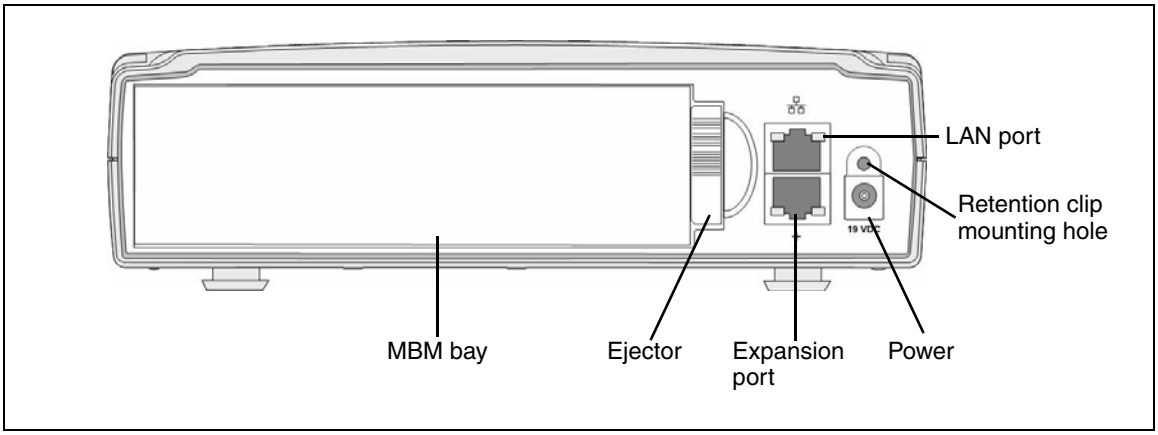


Table 2 BCM50 expansion unit ports, connectors, and descriptions

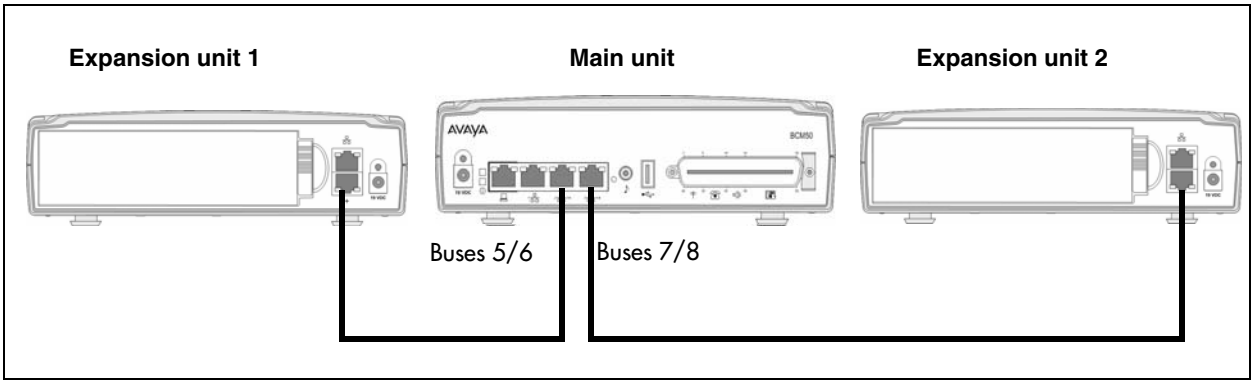
Port/connector	Description
LAN port (port 1)	An RJ-45 jack used to connect the customer LAN to the main unit. The LAN port on the expansion unit connects to the internal Ethernet switch on the main unit. You can use the expansion unit LAN port to connect an additional device to the LAN.
Power connector	A barrel connector jack used to connect the power supply to the expansion unit.
Retention clip mounting hole	A small hole into which you insert the retention clip. The retention clip secures the power connector to the expansion unit.
Expansion port	An RJ-45 jack used to connect the expansion unit to the main unit.
Ejector	The ejector is used to remove the media bay module from the expansion unit.
MBM bay	A slot into which you install an MBM.

To connect an MBM to the Avaya BCM50 system, you must install the MBM in the expansion unit, and then connect the expansion unit to the main unit. See Installing an expansion unit on page 91 for more information about installing an expansion unit.

Warning: Make sure you disconnect the power supply to the expansion unit before inserting or removing an MBM.

The supplied Ethernet cable (shielded) connects the expansion port on the expansion unit to one of the two expansion ports on the main unit. See the figure Expansion unit and expansion connectors on page 36. Expansion unit 1 maps to buses 5/6 (port2), while expansion unit 2 maps to buses 7/8 (port 3).

Figure 8 Expansion unit and expansion connectors



The LAN port on the expansion unit is connected to the internal Ethernet switch on the main unit. You can use the expansion unit LAN port to connect an additional device to the LAN.

Note: When you plug an expansion unit into the correct port on the main unit, the LEDs on the expansion unit port light, while the LEDs on the main unit port turn off.

Note: When generating your keycode, you must select the feature for the expansion ports you require. If your keycode contains the feature for one expansion port only, the expansion port on the left (port 2) is active.

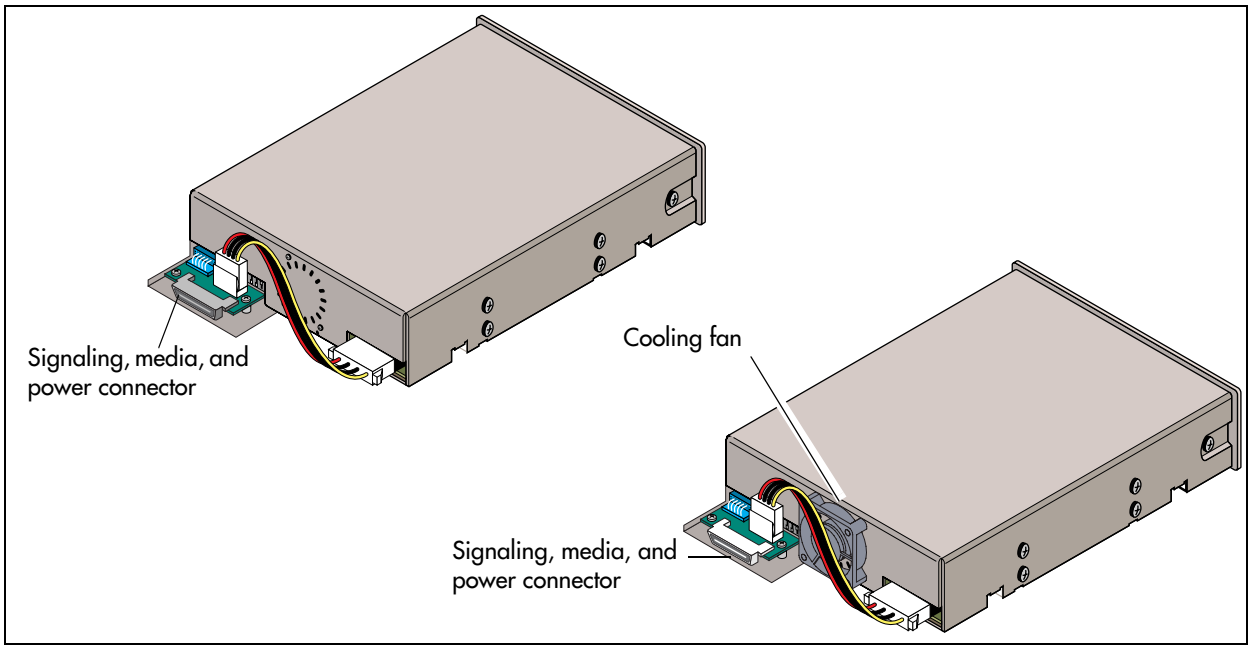
Media bay modules

The media bay modules (MBM) connect with external devices to implement various types of voice trunks and extensions. You can install one MBM in an expansion unit and you can connect up to two expansion units to the Avaya BCM50 system.

Note: To determine which media bay modules and which types of trunk lines are available in your location, see Interface availability on page 251.

The back of the MBM has a single connector that provides signaling channels, media channels, and power to the MBM. This connector plugs into the MBM backplane in the expansion unit. Some MBMs also have a cooling fan that operates using the MBM power source. The figure Media bay module connectors (rear view) on page 38 shows the rear views of the two types of MBMs.

Figure 9 Media bay module connectors (rear view)



Trunk media bay modules

Trunk media bay modules connect telecommunications lines to the Avaya Business Communications Manager 50 (Avaya BCM50) system.

The table Trunk MBMs on page 39 lists the types of trunk media bay modules that are available for the Avaya BCM50 system. Digital trunk media bay module

Table 3 Trunk MBMs

Module type	Function	Special notes
DTM (see The table Trunk MBMs on page 39 lists the types of trunk media bay modules that are available for the Avaya BCM50 system. Digital trunk media bay module on page 39)	Connects digital public switched telephone lines to the BCM50 6.0 system.	Can connect to T1 or PRI-E1/T1 interfaces.
BRIM (see Basic rate interface media bay module on page 40)	Connects a maximum of four ISDN BRI S/T interfaces.	—
GATM4/GATM8 (see Global Analog Trunk Module on page 40)	Connects either four (GATM4) or eight (GATM8) analog public switched telephone lines to the BCM50 6.0 system.	—
ADID4/ADID8 (see Analog direct inward dialing media bay module on page 41)	Connects either four (ADID4) or eight (ADID8) analog DID interfaces.	—
R2MFC	Provides MFC-R2 connectivity over an E1 trunk.	For details about the R2MFC MBM, see the *R2MFC Media Bay Module Installation and Configuration Guide* (NN40010-300).
Note: See Market profile attributes on page 251 for supported regions.		

The digital trunk media bay module (DTM) connects to a standard digital PSTN T1 or E1 carrier:

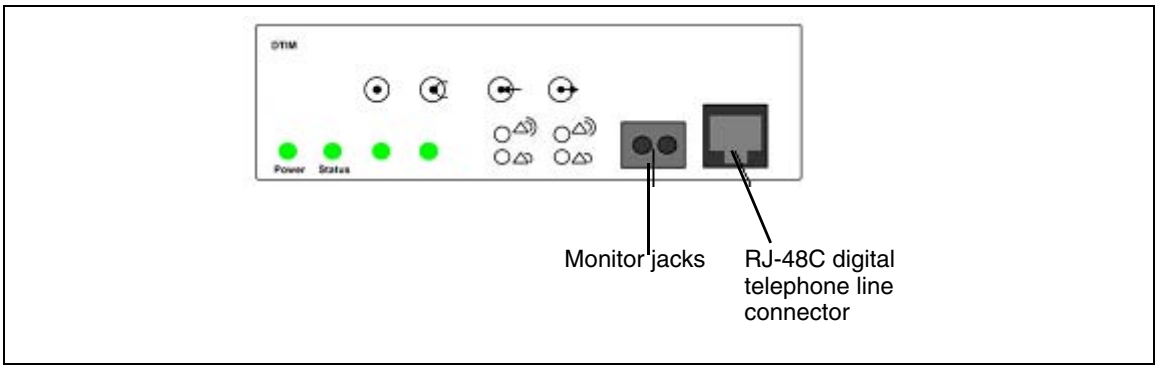
- On North American Avaya BCM50 systems, the DTM connects a T1 (24 channel) or PRI (23 channel) circuit to the BCM50. This PRI interface supports the NI-2 and MCDN protocol variants.
- On International Avaya BCM50 systems, the DTM connects a 30 channel PRI, DASS2, or DPNSS circuit to the BCM50. This PRI interface supports the ETSI Euro, ETSI QSIG, and MCDN protocol variants.

The front bezel of the DTM has an RJ-48C connector that connects the DTM to the service provider connection point. The faceplate also has a set of monitor jacks you can use to monitor the span.

Six additional LEDs are on the front of the DTM. For information about these additional LEDs, see DTM LEDs on page 62.

The figure DTM faceplate on page 40 shows the DTM module interfaces.

Figure 10 DTM faceplate

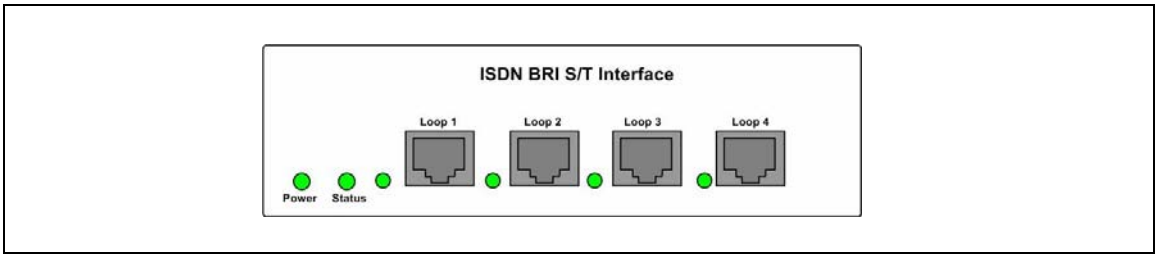


Basic rate interface media bay module

The basic rate interface media bay module (BRIM) connects a maximum of four BRI ISDN loops to the Avaya BCM50 system. The BRIM recognizes only the T-interface used in European networks. To use the BRIM with the U-interface, typical in North American networks, you require an external NT1 box to convert the U-interface to a T-interface.

Each BRI ISDN loop you connect adds two telephone lines to the BCM50 system. Therefore, each BRIM adds a maximum of eight lines to the BCM50 system through the four RJ-48C jacks on the faceplate. The LEDs beside each RJ-48C jack are on when the ISDN line is active. The figure BRIM faceplate on page 40 shows the BRIM faceplate LEDs and connections.

Figure 11 BRIM faceplate

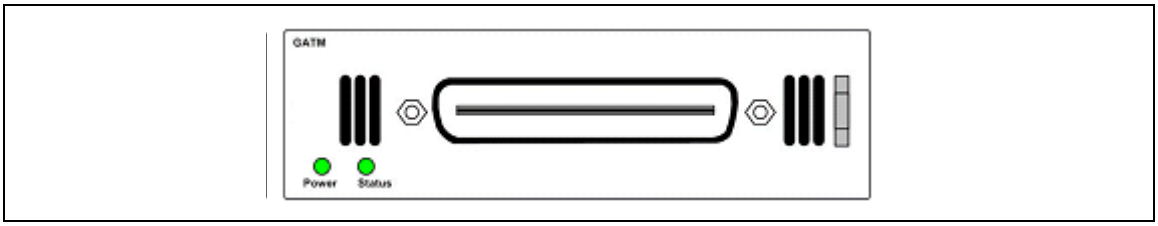


Global Analog Trunk Module

The Global Analog Trunk Module (GATM) provides an interface for four or eight analog public switched telephone network lines. This module supports both pulse and tone dialing, as well as Caller ID and Disconnect Supervision in selected markets throughout the world.

The GATM uses an RJ-21 connector as the trunk interface. The figure GATM faceplate on page 41 shows the GATM faceplate LEDs and RJ-21 connector. The module is available either in four-port (GATM4) or eight-port (GATM8) configurations.

Figure 12 GATM faceplate

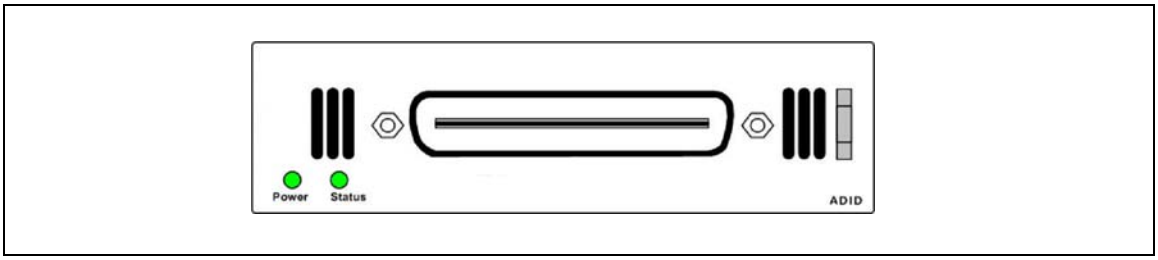


Analog direct inward dialing media bay module

The analog direct inward dialing (ADID) MBM provides an interface for four or eight analog public switched telephone network (PSTN) lines. The ADID MBM supports both pulse and tone dialing as well as disconnect supervision, and direct inward dialing call progress signaling as described in standard TIA-464C.

The ADID MBM uses an RJ-21 connector for trunk connections. The figure ADID faceplate on page 41 shows the ADID faceplate LEDs and connectors. The ADID is available either in four-port (ADID4) or eight-port (ADID8) configurations.

Figure 13 ADID faceplate



Station media bay modules

Station MBMs connect telephones and analog telecommunication devices to the Avaya BCM50 system.

The table Station MBMs on page 41 lists the available station media bay modules.

Table 4 Station MBMs (Sheet 1 of 2)

Module type	What it does	Special Notes
DSM16+/ DSM32+ (see Digital station media bay module on page 42)	Connects a maximum of 16 (DSM16+) or 32 (DSM32+) digital telephones to the Avaya BCM50 system.	—
4x16 Combination of a CTM4 and a DSM16 (see 4x16 media bay module on page 42)	Connects a maximum of four analog public switched telephone lines to the Avaya BCM50 system. Also connects a maximum of 16 digital telephones to the BCM50 system.	—

Table 4 Station MBMs (Sheet 2 of 2)

Module type	What it does	Special Notes
G4x16/G8x16 Combination of a GATM4/GATM8 and a DSM16 (see G4x16 and G8x16 media bay module on page 43)	Connects a maximum of four (G4x16) or eight (G8x16) analog public switched telephone lines to the BCM50 system. Also connects a maximum of 16 digital telephones to the Avaya BCM50 system.	—
GASM (ASM8) (see Analog station media bay modules on page 43)	Connects a maximum of eight analog devices to the BCM50 system. This module provides the following additional services: caller ID, pass through, message waiting indication, and disconnect supervision at the telephone. This module downloads new firmware.	—
Note: See Market profile attributes on page 251 for supported regions.		

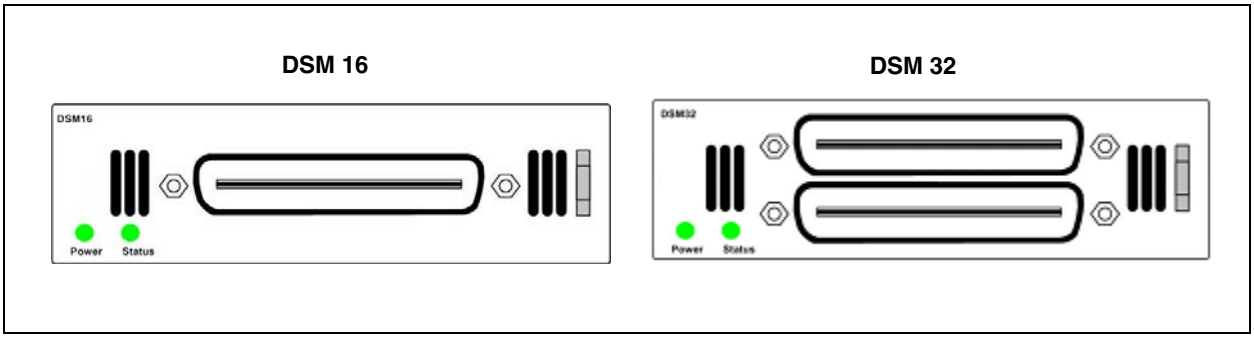
Digital station media bay module

The digital station media bay modules (DSM) support digital telephones on the Avaya BCM50 system. This section describes the DSM16+ and DSM32+ media bay modules. See the figure DSM faceplate LEDs and connectors on page 42.

The digital station media bay modules have the following characteristics:

- DSM16+—supports 16 digital telephones through one RJ-21 connector.
- DSM 32+—supports 32 digital telephones through two RJ-21 connectors.

Figure 14 DSM faceplate LEDs and connectors

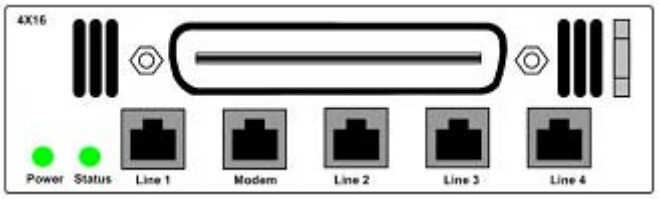


4x16 media bay module

The 4x16 MBM provides both analog trunk connections and digital telephone connections. This MBM provides connections for four analog trunk lines and 16 digital telephones. Each of the four analog trunk lines support Caller ID and disconnect supervision. You can use an analog telephony device, such as a modem, fax, or telephone to share the trunk through the Aux port beside Line 1.

The figure 4x16 faceplate LEDS and connectors on page 43 shows the 4x16 MBM. The 4x16 MBM has one RJ-21 connector and five RJ-11 connectors on the faceplate.

Figure 15 4x16 faceplate LEDS and connectors

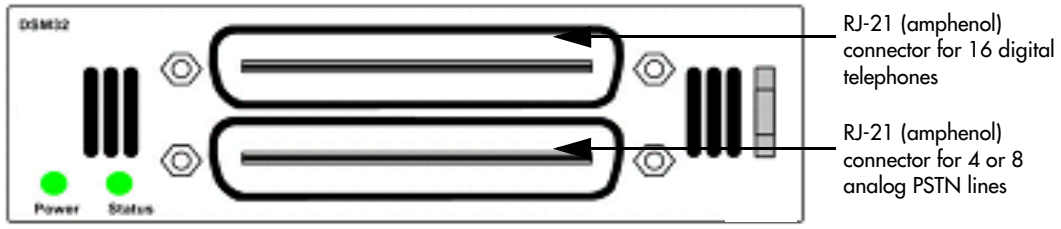


G4x16 and G8x16 media bay module

The G4x16 MBM is a combination of GATM4 and DSM16 MBMs, while the G8x16 is a combination of GATM8 and DSM16 MBMs.

The figure G4x16/G8x16 faceplate LEDS and connectors on page 43 shows the G4x16/G8x16 MBM faceplate with two RJ-21 (amphenol) connectors. The upper RJ-21 (amphenol) connector connects 16 digital telephones to the system, while the lower RJ-21 (amphenol) connector connects 4 or 8 analog PSTN lines with pulse and tone dialing, caller ID, and disconnect supervision in selected markets.

Figure 16 G4x16/G8x16 faceplate LEDS and connectors


DSM32
Power
Status
RJ-21 (amphenol) connector for 16 digital telephones
RJ-21 (amphenol) connector for 4 or 8 analog PSTN lines

Analog station media bay modules

The analog station media bay modules (ASM8, ASM8+, and GASM) can connect to a maximum of eight analog telecommunication devices. These devices are standard analog telephones, cordless telephones, fax machines, answering machines, or modems. The maximum speed for a modem connection is 28.8 Kb/s.

In addition to ASM8 features, the ASM8+ and GASM offer the following features:

- Visual Message Waiting Indicator (VMWI): LED indicates to the end user that a message is waiting.
- Caller ID: provides the name, phone number, and other information about the caller to the end user at the start of the call.
- Firmware downloading capability: The core can upgrade the ASM8+ and GASM firmware at customer sites.

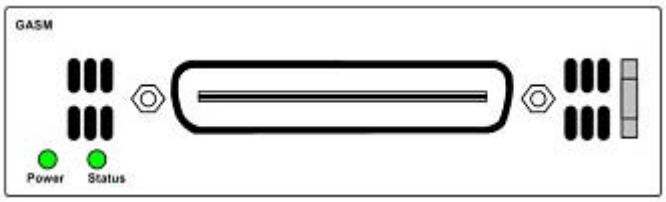
- Enhanced ringing capability: ASM8+ and GASM provide a ringing voltage of 2 REN/65 V rms per port.
- The GASM8 is designated as an on-premise station (ONS) port. This device provides telecommunications ringing voltages and can be configured to provide voltage message waiting indicator (VMWI) voltage levels. Installation of this device and all connections to this device must be performed by qualified telecommunications service personnel who are aware of the hazards associated with telecommunications wiring and are aware of the local regulations for treatment of telecommunications wiring for ONS deployment.
- Disconnect supervision (Open Switch Interval (OSI) as per EIA/TIA 464): indicates to the attached device, in an established communication, that the connected device releases the call.

Disconnect supervision note: When disconnect happens from the Central Office (CO), the ASM8+ provides an open switch interval (OSI) to the off-hook station of 850 milliseconds (ms) (TIA/EIA 464 section 5.4.10.2.4, minimum is 600 ms) as a disconnect signal. If the station remains on-hook after the disconnect signal, the ASM8+ disconnects the station equipment from the network without returning a tone (TIA/EIA 464 section 5.4.10.2.5[1]). After the station equipment goes on-hook, the ASM8+ station interface is restored to on-hook (idle).

You must ensure the device, application, or interface card connected to an ASM8+ station interface conforms to these on-hook and off-hook conditions.

The ASM8, ASM8+, and GASM each has one RJ-21 connector on the faceplate. The figure GASM faceplate LEDs and connectors on page 44 shows the GASM.

Figure 17 GASM faceplate LEDs and connectors



The ringer equivalency number (REN) (per port) for ASM8 is 1; the REN for ASM8+ and GASM is 2.

Note: The termination of the analog interface can consist of any combination of devices, subject only to the requirement that the sum of the RENs of all the devices does not exceed the REN of the interface to which the device is connected.

The table ATA2, ASM8, ASM8+, GASM, and GASI analog device specifications on page 45 shows the specifications for ATA2, ASM8, GASM, and GASI.

Table 5 ATA2, ASM8, ASM8+, GASM, and GASI analog device specifications (Sheet 1 of 2)

Specification	ATA2	ASM8	ASM8+	GASM	GASI
Ringing frequency (North America)	20 Hz ± 1 Hz	20 Hz ± 1 Hz	20 Hz ±1 Hz	20 Hz ±1 Hz	20 Hz ±1 Hz
Ringing frequency (Europe)	25 Hz ± 1 Hz	25 Hz ± 1 Hz	25 Hz ± 1 Hz	25 Hz ± 1 Hz	25 Hz ± 1 Hz
Ringing voltage (North America)	80 V rms ± 10%	55 V rms ± 10%	65 V rms ± 10%	65 V rms ± 10%	65 V rms ± 10%
Ringing voltage (Europe)	75 V rms ± 10%	N/A	65 V rms ± 10%	65 V rms ± 10%	65 V rms ± 10%
Loop current	20 mA minimum	20 mA minimum	20 mA minimum	20 mA minimum	20 mA minimum
Battery feed voltage	–48 V dc ± 10%	–48 V dc ± 10%	–29 V dc ± 10%	–48 V dc ± 10%	–48 V dc ± 10%
FIC code	OL13ABC	N/A	N/A	N/A	N/A
Ringer equivalency number	3	1	2	2	2
ATA2 to BCM50 loop resistance (cable only)	135 ohms (800 m of 0.5-mm wire or 2600 ft of 24-AWG wire)	N/A	N/A	N/A	N/A
Analog loop resistance on terminal side for voice applications (cable only)	1300 ohms (7200 m of 0.5-mm wire or 26000 ft of 24-AWG wire)	250 ohms (1538 m of 0.5-mm wire or 5000 ft of 24-AWG wire)	200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24-AWG wire)	200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24-AWG wire)	200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24-AWG wire)
Analog loop resistance on terminal side for data applications (cable only)	200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24-AWG wire)	250 ohms (1538 m of 0.5-mm wire or 5000 ft of 24-AWG wire)	200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24-AWG wire)	200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24-AWG wire)	200 ohms (1231 m of 0.5-mm wire or 4000 ft of 24-AWG wire)
Input impedance at tip and ring	600 ohms	600 ohms	600 ohms	600 ohms	600 ohms
Return loss	> 20 dB for 200 to 3400 Hz (when terminated with 600 ohms)	> 20 dB for 200 to 3400 Hz (when terminated with 600 ohms)	> 20 dB for 200 to 3400 Hz (when terminated with 600 ohms)	> 20 dB for 200 to 3400 Hz (when terminated with 600 ohms)	> 20 dB for 200 to 3400 Hz (when terminated with 600 ohms)
Insertion loss on an internal call	ATA2 to BCM50 loss 3.0 dB ± 0.5 dB	ATA2 to BCM50 loss 3.0 dB ± 0.5 dB	ATA2 to BCM50 loss 3.0 dB ± 0.5 dB	ATA2 to BCM50 loss 3.0 dB ± 0.5 dB	ATA2 to BCM50 loss 3.0 dB ± 0.5 dB
Insertion loss on an external call	ATA2 to BCM50 loss 2.2 dB ± 1.0 dB; BCM50 to ATA2 loss 0.5 dB ± 1.0 dB	ASM to BCM50 loss 3.0 dB ± 1.0 dB; BCM50 to ASM loss 0.5 dB ± 1.0 dB	ASM to BCM50 loss 3.0 dB ± 1.0 dB; BCM50 to ASM loss 0.5 dB ± 1.0 dB	ASM to BCM50 loss 3.0 dB ± 1.0 dB; BCM50 to ASM loss 0.5 dB ± 1.0 dB	ASM to BCM50 loss 3.0 dB ± 1.0 dB; BCM50 to ASM loss 0.5 dB ± 1.0 dB

Table 5 ATA2, ASM8, ASM8+, GASM, and GASI analog device specifications (Sheet 2 of 2)

Specification	ATA2	ASM8	ASM8+	GASM	GASI
MWI type (see **Note**)	Stutter tone	Stutter tone	Stutter tone/ Voltage MWI (CO: 120 V)	Stutter tone/ Reverse polarity/ Voltage MWI (CO: 120 V)	Stutter Tone/ Reverse polarity/ Voltage MWI (PBX: 90 V)
Disconnect supervision types	N/A	N/A	OSI EIA/TIA 464 section 4.5.10.2.4/ 4.5.10.2.5.1	OSI EIA/TIA 464 section 4.5.10.2.4/ 4.5.10.2.5.1	N/A
Note: The MWI type depends on the country profile, and the MWI voltage shown is a maximum value.					

Avaya BCM50 hardware

The following Avaya BCM50 hardware items simplify the setup and connection of the system:

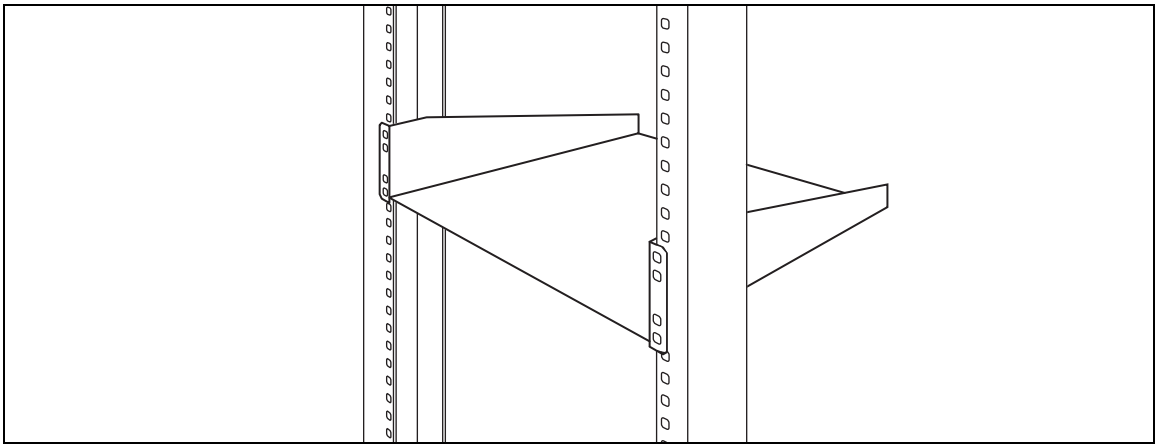
- Rack-mount shelf on page 46
- Wall-mount bracket on page 47
- Power supply mounting bracket and enclosure on page 48
- Patch panel on page 47
- Wiring field card on page 48

Rack-mount shelf

To rack-mount a Avaya BCM50 unit (main unit or expansion unit), you need a rack-mount shelf. The rack-mount shelf mounts in a standard 19-inch equipment rack. The BCM50 unit then clips into the tabs on the rack-mount shelf. These tabs prevent the unit from sliding or falling off the shelf.

If the BCM50 system includes additional units, you can clip another unit to a second set of tabs on the rack-mount shelf. You can clip additional units to tabs on the top of the other units. See the figure Rack-mount shelf installed in equipment rack on page 46.

Figure 18 Rack-mount shelf installed in equipment rack

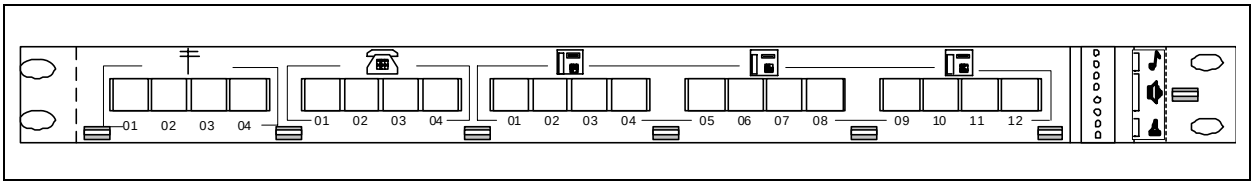


Patch panel

The Avaya BCM50 patch panel simplifies the connections of lines and extensions to the main unit. The BCM50 patch panel installs into the rack-mount shelf in a standard equipment rack and connects to the RJ-21 telephony connector with a user-supplied RJ-21 cable. See the figure Patch panel connectors on page 47.

Note: The four analog lines on the patch panel are only available with the standard main units. The four analog lines are not available with the BRI series (b-series) main units.

Figure 19 Patch panel connectors

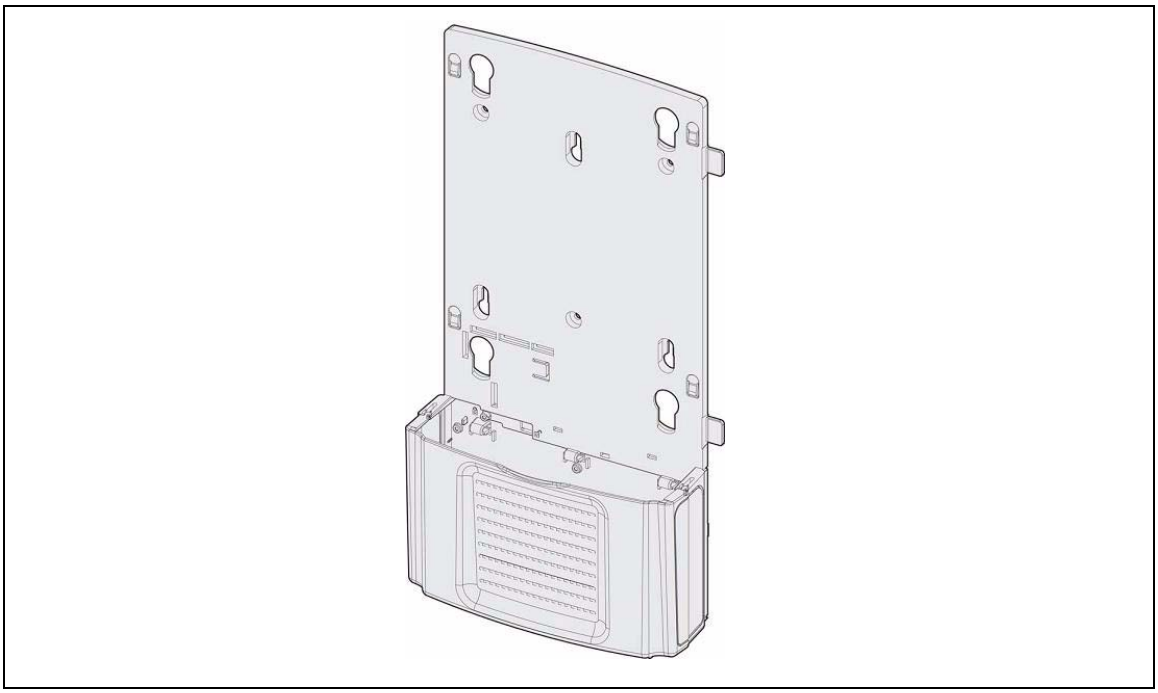


Wall-mount bracket

To wall-mount an Avaya BCM50 unit (main unit or expansion unit), you need a wall-mount bracket. The wall-mount bracket is attached to the wall, and the unit is connected to the wall-mount bracket. If the BCM50 system includes additional units, you need a wall-mount bracket for each unit.

Each wall-mount bracket includes a cable-management tray that you use to store and organize the cables connected to the BCM50 units. See the figure Wall-mount bracket on page 48.

Figure 20 Wall-mount bracket



Power supply mounting bracket and enclosure

There are two Avaya BCM50 power supply mounting options that enable you to install your power supply units next to your BCM50 system and keep the power cables neatly organized:

- Power supply mounting enclosure — accommodates up to three power supplies in a case that is similar in size and shape to a BCM50 unit. You can install the power supply mounting enclosure in the same way as BCM50 unit (in a rack, on a wall, or on a desktop).
- Single power supply mounting bracket — accommodates a single power supply for wall-mount applications.

Wiring field card

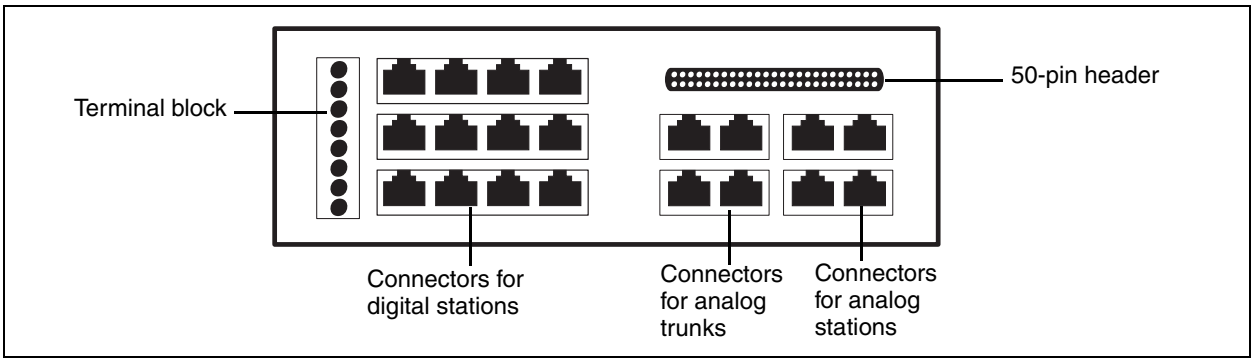
The wiring field card (WFC) simplifies the connections of lines and extensions to the main unit. The WFC installs into the cable-management tray of the wall-mount bracket and connects to the RJ-21 telephony connector through a 50-pin header.

The WFC contains 12 eight-pin modular jacks for digital stations, 4 eight-pin modular jacks for analog trunks, and 4 eight-pin modular jacks for analog stations. The eight-pin modular jacks accept RJ-45 or RJ-11 modular plugs.

A terminal block is available to connect auxiliary equipment. A 50-pin header connects to the Avaya BCM50. See the figure Wiring field card on page 49.

Note: The four analog lines on the WFC are only available with the standard main units. The four analog lines are not available with the BRI series (b-series) main units.

Figure 21 Wiring field card



Avaya BCM50 components

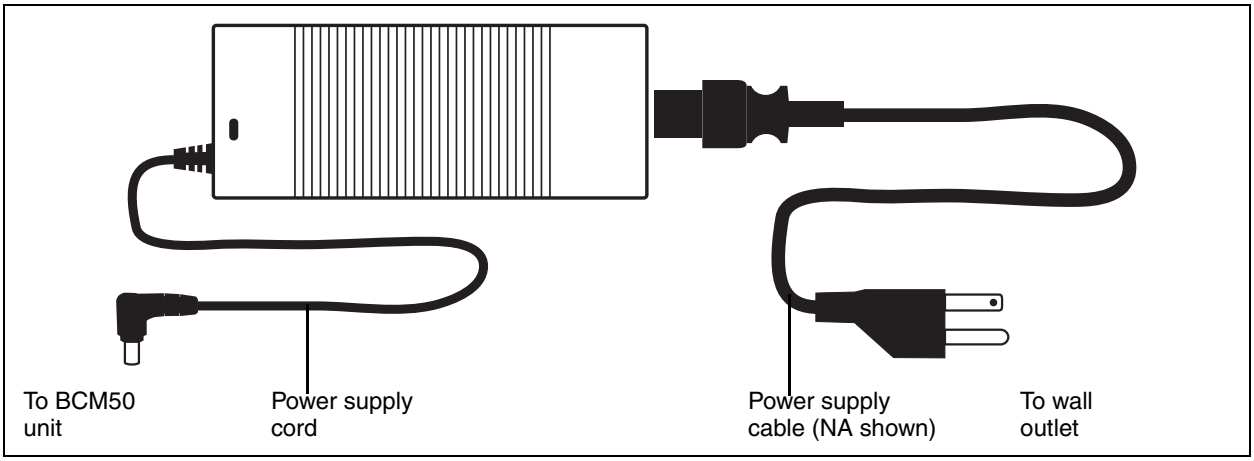
For descriptions of the Avaya BCM50 components:

- Power supply on page 49
- Power supply adapter cord (international users) on page 50
- Uninterruptable power supply on page 50
- Hard disk on page 51
- Router card on page 53
- Cooling fan on page 51
- RJ-21 telephony connector on page 52

Power supply

The power supply is an external device that connects to the Avaya BCM50 units. See the figure BCM50 power supply on page 49. You must have one power supply for each unit in your BCM50 system.

Figure 22 BCM50 power supply



A BCM50 power supply is included with each main unit and expansion unit.

In addition, international (non-North American) users require a power supply adapter cord for each main unit and expansion unit.

Power supply adapter cord (international users)

The power supply adapter cord is for international (non-North American) Avaya BCM50 users. The cord connects to the power supply on one end and to the (C-14) BCM50 power bar on the other end.

You require one power supply adapter cord for each power supply you want to connect to the power bar.

Uninterruptable power supply

An uninterruptable power supply (UPS) is an optional device that maintains continuous operation during a power interruption or failure. The UPS provides power source monitoring and battery backup activation so that critical BCM50 functionality is maintained.

During a power failure, the UPS provides sufficient time to either correct the problem or activate a contingency plan to sustain services. The UPS performs a graceful shutdown of the Avaya BCM50 two minutes before the UPS battery power is drained.

The BCM50 supports American Power Conversion (APC) UPS devices that use a USB control interface. The APC UPSs include the APC UPS-Smart family (for example, UPS-Smart 750 and UPS-Smart 1000) and UPS-Back family (for example, UPS-Back 500 ES and UPS-Back 350 ES). You can use the UPS control software to configure various operational settings.

Note: For the UPS to function correctly, you must connect it before you power up the Avaya BCM50 system. If you connect a UPS to a running system, the UPS does not function.

The USB port on the UPS uses a different communication speed than the USB port on the BCM50 system. Due to this difference, you must use an industry-standard USB hub (USB 1.1-compatible) to connect the UPS data connection to the BCM50 system. The USB hub not only provides additional USB ports, it converts the data communication speed so the UPS and BCM50 system can communicate properly.

On Avaya BCM50 systems with more than one unit, you must connect the power supplies for all the units must to a single UPS.

The interaction between the UPS and the BCM50 occurs in three stages:

1. **Configuration**—This stage sends configuration information to the UPS device and requires minimal user interaction.
2. **Monitoring**—This stage is a steady-state, periodic monitoring cycle where the BCM50 reads the status of the UPS. This stage requires minimal user interaction.
3. **Failure condition**—This stage initiates an action when a threshold value is surpassed.

The BCM50 system requires user interaction in the case of a planned system shutdown. You must manually power down the UPS and the BCM50 main unit when performing a system shutdown.

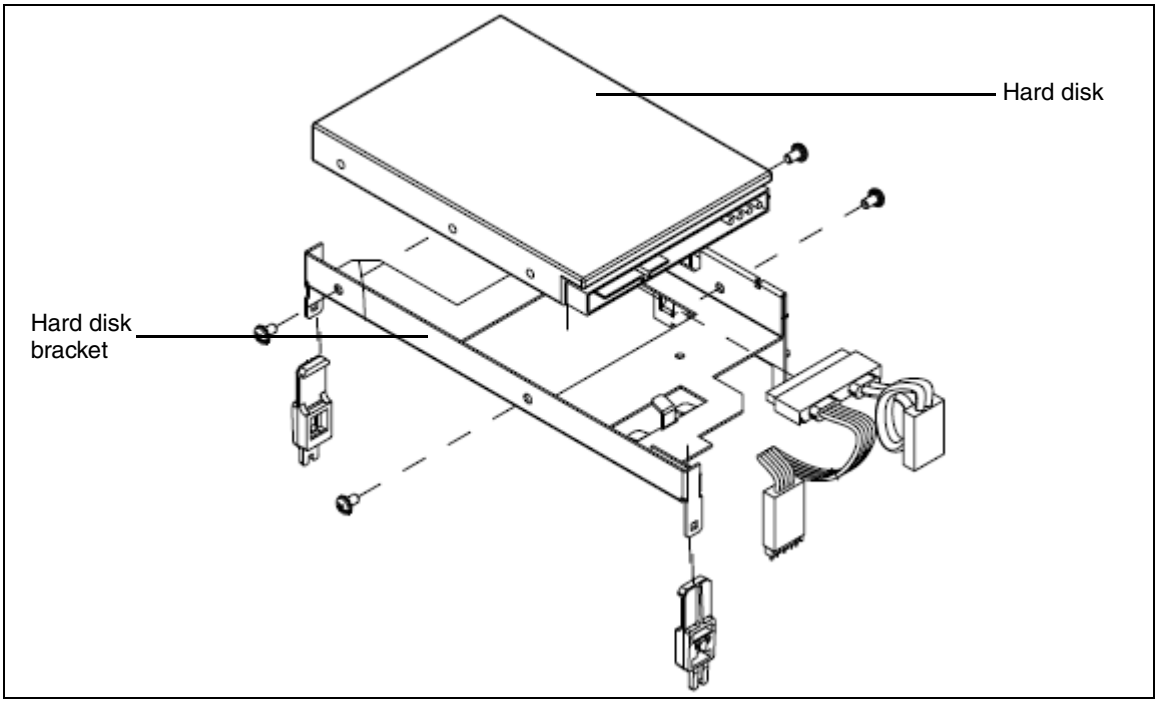
The UPS feature is supported in all markets (110~120V and 220~240V power standards).

Hard disk

Each main unit contains a single hard disk and a hard disk bracket to install it in the main unit. See the figure Hard disk and bracket on page 51.

For installation and replacement instructions, see Replacing an internal component on page 195.

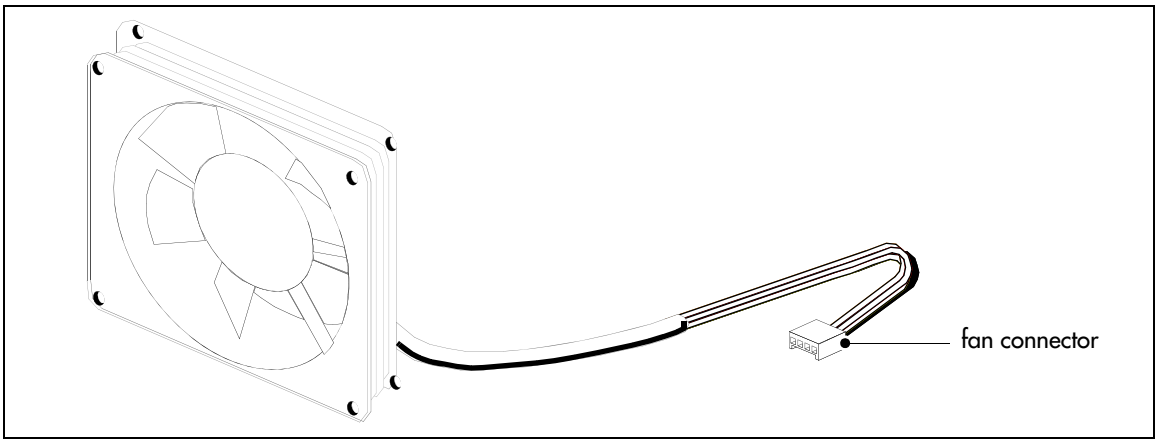
Figure 23 Hard disk and bracket



Cooling fan

The main units have one cooling fan. The expansion unit has two cooling fans. See the figure Cooling fan on page 52.

Figure 24 Cooling fan



The cooling fan mounts in the back of the Avaya BCM50 enclosure.

For information about how to install or replace the cooling fan, see Replacing an internal component on page 195.

RJ-21 telephony connector

Use the RJ-21 telephony connector to connect a 25-pair (RJ-21) cable to the main unit. Then use these 25 pairs of wires to connect to the following telephony devices (see RJ-21 telephony connector wiring chart on page 215):

- **Four analog lines (standard main units only)**
  Use these connections for analog trunks from the Public Switched Telephone Network (PSTN). The four analog lines on the RJ-21 telephony connector are not available on the BRI series (b-series) main units.
- **Four analog telephones**
  Use these connections for analog telephony devices such as single-line telephones, fax machines, and modems.
- **Auxiliary ringer**
  Use this connection for an auxiliary ringer (customer supplied). The Avaya BCM50 system uses the auxiliary ringer to control the cadence of an auxiliary ringer. You must use this output in a low-current, low-voltage application only. Do not use this output for switching the auxiliary ringer directly.
- **Page output**
  Use this connection to connect an internally generated voice-paging signal to an external paging amplifier (customer supplied).
- **Page relay**
  When you use the page output to connect an external paging amplifier, you also use the page relay. The page relay connects to a floating relay contact pair. The Avaya BCM50 system uses the page relay to control the external paging amplifier.

- **Music input**
  Use the Music input to connect an external music source that supplies a signal to held lines (music on hold) or telephone speakers (background music). The input source can be any available radio or music source approved for connection to the network. If you use this connection, do not use the Music input jack on the main unit faceplate.
- **Twelve digital telephones**
  Use these connections for digital telephones. For a list of digital telephones that are compatible with the Avaya BCM50 system, see the *Telephony Device Installation Guide*.

Warning: External equipment connected to the auxiliary ringer, page relay, page output, and music-on-hold interfaces must use safety extra low voltage (SELV).
All four interfaces are SELV and the external equipment connected to these interfaces must be SELV. If these interfaces are not SELV, you must use external line isolation units (LIU).

Note: The analog trunk interfaces and analog telephony device interfaces on the RJ-21 telephony connector are compatible with the North American telephony interface standards only.
If your Avaya BCM50 system is in a country that uses a different telephony standard, you must use media bay modules for your analog trunks and media bay modules or ATAs for your analog telephony devices.

Router card

The BCM50e main unit has a router card that uses an Ethernet interface to connect to a WAN edge device (for example, an external ADSL modem or a cable modem).

The BCM50a main unit has a router card that uses an ADSL interface to connect the Avaya BCM50 system to the Internet Service Provider (ISP).

For information about replacing the router card, see Replacing an internal component on page 195.

Field-replaceable units

The table Field-replaceable units on page 54 and the table Media bay modules on page 54 provide a list of field-replaceable units (FRU) and media bay modules (MBM) for the Avaya BCM50 system. Use these tables as references when you need to order, replace, or install hardware components. The tables provide references to the component descriptions and installation procedures.

Note: The product engineering code (PEC) can change over time; consult the catalog for the latest information.

Table 6 Field-replaceable units

Component description	FRU Description	Replacement procedure
Router card with Ethernet connector	"Router card"	"Replacing an internal component"
Router card with ADSL interface	"Router card"	"Replacing an internal component"
Hard disk, programmed	"Hard disk"	"Replacing an internal component"
Power supply	"Power supply"	"Replacing a power supply"
Cooling fan	"Cooling fan"	"Replacing an internal component"

Table 7 Media bay modules

Component description	FRU Description	Installation procedure
4x16 MBM	"4x16 media bay module"	"To install an MBM"
Analog DID	"Analog direct inward dialing media bay module"	"To install an MBM"
ASM8 MBM	"Analog station media bay modules"	"To install an MBM"
BRIM MBM	"Basic rate interface media bay module"	"To install an MBM"
DSM16+ MBM	"Digital station media bay module"	"To install an MBM"
DSM32+ MBM	"Digital station media bay module"	"To install an MBM"
DTM MBM	"The table Trunk MBMs on page 39 lists the types of trunk media bay modules that are available for the Avaya BCM50 system. Digital trunk media bay module"	"To install an MBM"
G4x16/G8x16 MBM	"G4x16 and G8x16 media bay module"	"To install an MBM"
GASM MBM	"Analog station media bay modules"	"To install an MBM"
GATM4/GATM8 MBM	"Global Analog Trunk Module"	"To install an MBM"

Accessories

You can use the following accessories with the Avaya BCM50 system:

Station auxiliary power supply (SAPS)—provides power for the central answering position (CAP) when you connect the 7316E to five or more KIMs. You can also extend the loop length between a telephone or terminal and the BCM50 system from 1000 to 2600 feet. You must use a dedicated cable to connect the two locations.

Analog Terminal Adapter 2 (ATA2)—converts digital signals to analog signals to allow communication with analog devices such as fax machines, modems, and answering machines. The ATA2 supports a maximum transmission rate of 28.8 Kb/s. With a single-line telephone, the ATA2 supports a long-loop configuration.

Chapter 3
Viewing the Avaya BCM50 system LEDs

This section describes the Avaya Business Communications Manager 50 (BCM50) system LEDs including Avaya BCM50 main unit, expansion unit, and media bay module (MBM) LEDs.

For information about the BCM50 system LEDs:

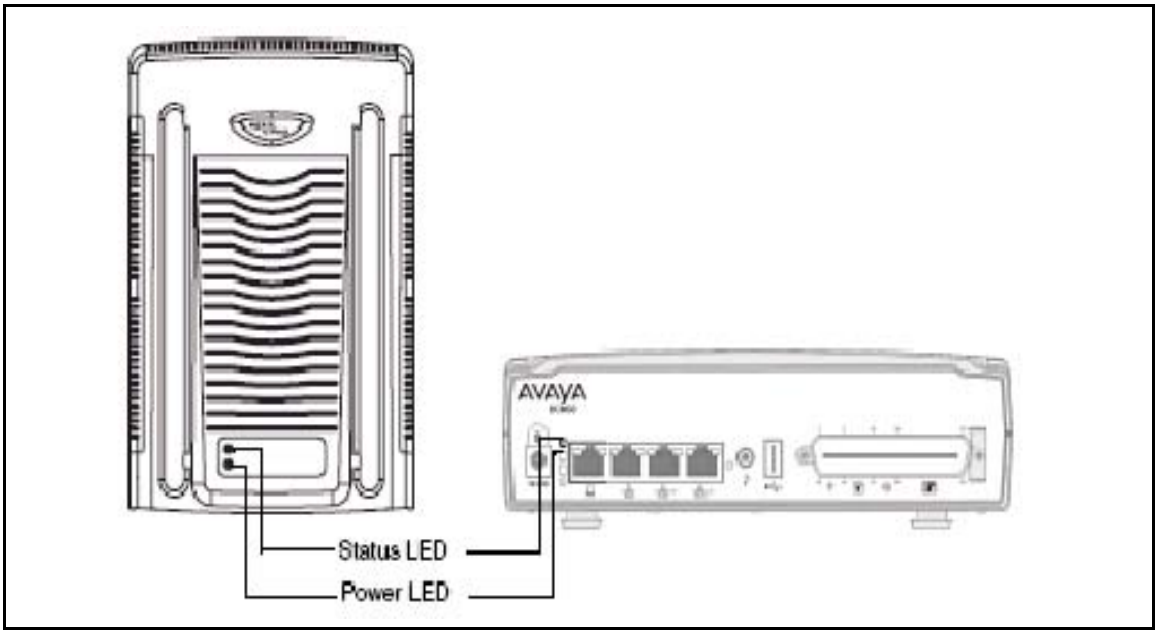
- System status LEDs on page 55
- LAN port LEDs on page 57
- ADSL router LEDs (BCM50a and BCM50ba only) on page 58
- Ethernet router LEDs (BCM50e and BCM50be only) on page 59
- BRI port LEDs on main unit (BRI series only) on page 61
- Media bay module LEDs (expansion units only) on page 61
- DTM LEDs on page 62
- BRIM LEDs on page 63

System status LEDs

The two system status LEDs on the Avaya BCM50 main units (BCM50, BCM50a, BCM50e, BCM50b, BCM50ba, and BCM50be) show the current state of the BCM50 system.

You can view the system status LEDs on the faceplate and on the top of the main unit. See the figure Location of system status LEDs on a main unit on page 56. The bottom LED is the power LED, and the top LED is the status LED. Under normal operating conditions, both LEDs are solid green.

Figure 25 Location of system status LEDs on a main unit



The table System status LED states and descriptions on page 56 describes the meaning of the system status LEDs after the system boots up and is in service.

Table 8 System status LED states and descriptions

Power	Status	Description
LED states seen during Start up sequence		
Solid yellow	Solid yellow	Power applied to system
Solid yellow	Off	Power on self test (POST). Lasts for 9 seconds.
Solid yellow	Solid yellow	System initializing (lasts 14 seconds).
Solid green	Solid yellow	Kernel initialization (lasts 8 seconds) or Safe OS.
Solid green	Blink green	Services initializing (lasts 1 minute).
Solid green	Solid green	Normal operation.
Solid green	Solid red	Services initialization failed.
LED states seen during Safe Mode start up sequence		
Solid red	Solid green	System running with factory default settings enabled.
Solid red	Solid red	System running in Software Reset mode.
Solid red	Blink yellow	System running in Configuration Reset mode.
LED states seen during shut down sequence or failure		
Solid green	Blink yellow	Graceful shutdown in progress.
Off	Solid yellow	Graceful shutdown completed.
Solid red	Blink yellow	Overheat detected. Thermal shutdown completed.

Table 8 System status LED states and descriptions

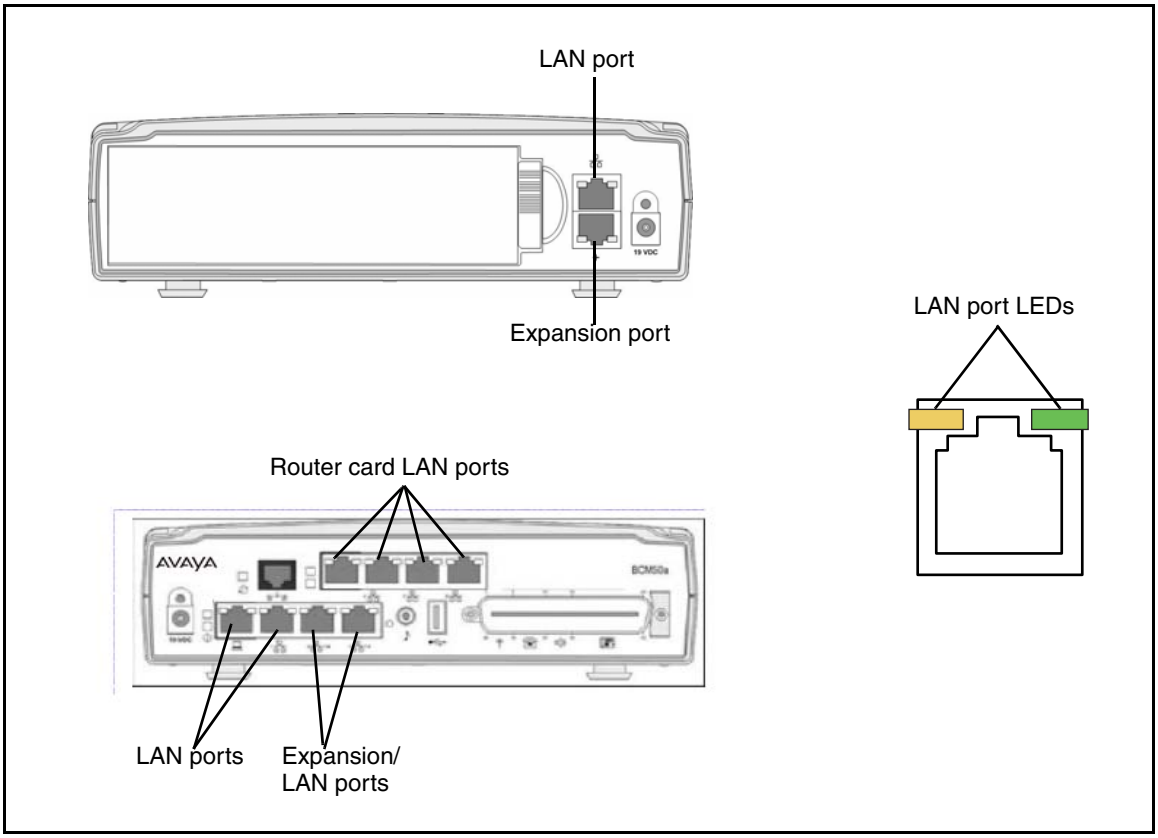
Power	Status	Description
Solid red	Solid red	Power spike or Rail power fluctuation detected.
Blink red	Solid red	Rail power fluctuation. Power Monitor Shutdown completed.
Solid yellow	Solid red	Power spike shutdown completed (temperature and Rail power ok).
Off	Off	No power, system is shut down (power cable is disconnected).
Start-up Profile LED states (seen only during initial system install or staging)		
Blink Yellow	Blink Yellow	Start-up Profile executing.
Solid Green	Solid Green	Start-up Profile successfully applied.
Blink Yellow	Blink Red	Start-up Profile failure.
Solid Green	Blink Yellow	Waiting for user input on Multi-Image Hard Drive CLI
Solid Red	Solid Red	Installation of BCM image in progress (multi-image hard drive)
Solid Red	Blink Red	Error during Installation (multi-image hard drive)

LAN port LEDs

Each LAN port on the main unit and expansion unit has two LEDs. These LEDs indicate the status of the connection for that LAN port. The figure LAN port LED locations on page 58 shows the location of these LEDs on the main units and expansion unit.

Note: The expansion ports on the main unit also function as LAN ports. The expansion port LEDs indicate LAN activity only. The LEDs do not indicate expansion unit presence. The LEDs do not light.

Figure 26 LAN port LED locations



The table LAN port and expansion port LED indicators on page 58 describes the possible LED states for the LAN ports LEDs.

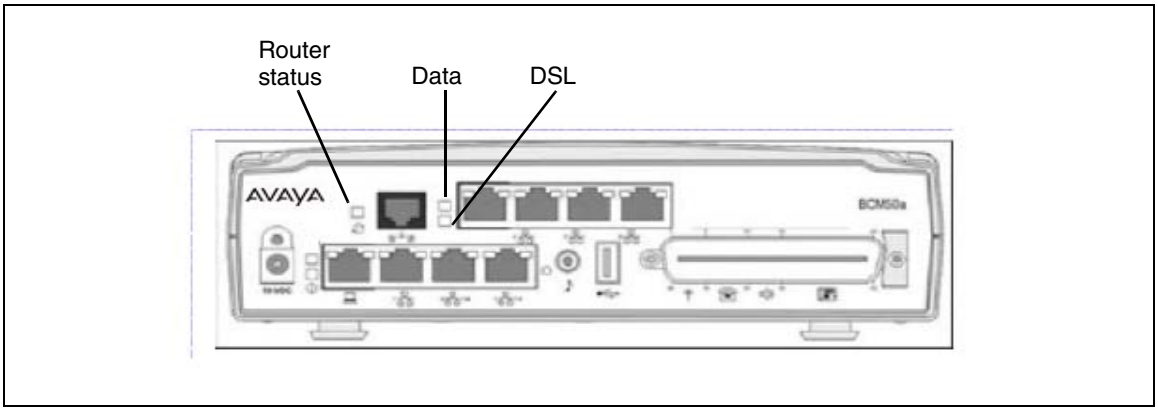
Table 9 LAN port and expansion port LED indicators

LED	Status	Description
Yellow	On	The LAN port is operating at 10 Mb/s.
Green	On	The LAN port is operating at 100 Mb/s.
Both LEDs	Off	No connection.
Any LED	Flashing	The LAN port is sending or receiving network data. The frequency of the flashes increases with increased traffic.

ADSL router LEDs (BCM50a and BCM50ba only)

The three ADSL router LEDs on the faceplate of the Avaya BCM50a and Avaya BCM50ba main units monitor router status, data, and DSL. The figure ADSL router LEDs on the BCM50a and BCM50ba main units (BCM50a shown) on page 59 shows the location of the three ADSL router LEDs.

Figure 27 ADSL router LEDs on the BCM50a and BCM50ba main units (BCM50a shown)



The table ADSL router LED descriptions on page 59 describes the possible ADSL router LED states.

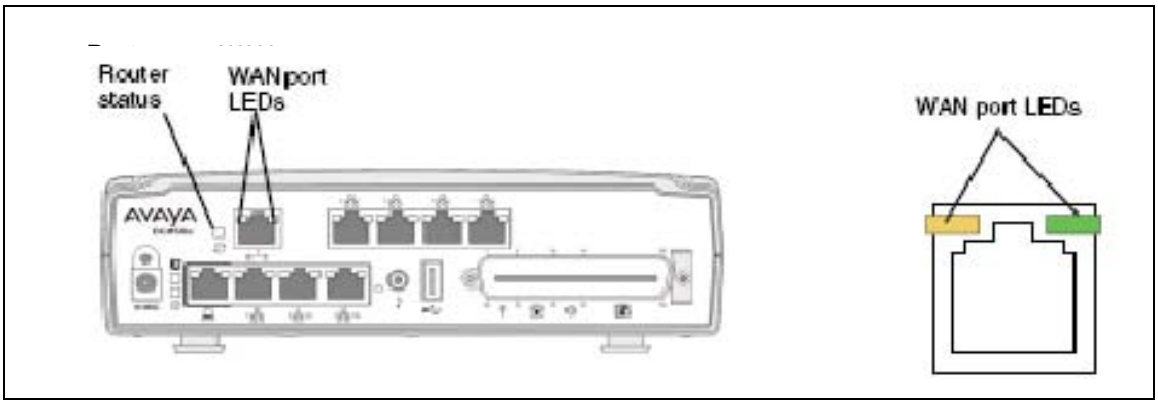
Table 10 ADSL router LED descriptions

LED	Status	Description
Router status	On	The router card is functioning properly.
	Off	The router card is not ready or malfunctioned.
	Flashing	The router card is rebooting.
Data	Flashing	The router card is sending or receiving data through the WAN port.
	Off	The router card is not sending or receiving data through the WAN port.
DSL	On	The router card is linked successfully to a digital subscriber line access multiplexer (DSLAM).
	Off	The DSL link is not functioning.
	Flashing	The router card is initializing the DSL line.

Ethernet router LEDs (BCM50e and BCM50be only)

The three Ethernet router LEDs on the Avaya BCM50e and Avaya BCM50be main units monitor the router status and the WAN port. The figure Ethernet router LEDs on the BCM50e and BCM50be main units (BCM50e shown) on page 60 shows the location of the three Ethernet router LEDs.

Figure 28 Ethernet router LEDs on the BCM50e and BCM50be main units (BCM50e shown)



The table LAN port LED indicators on page 60 describes the possible Ethernet router LED states.

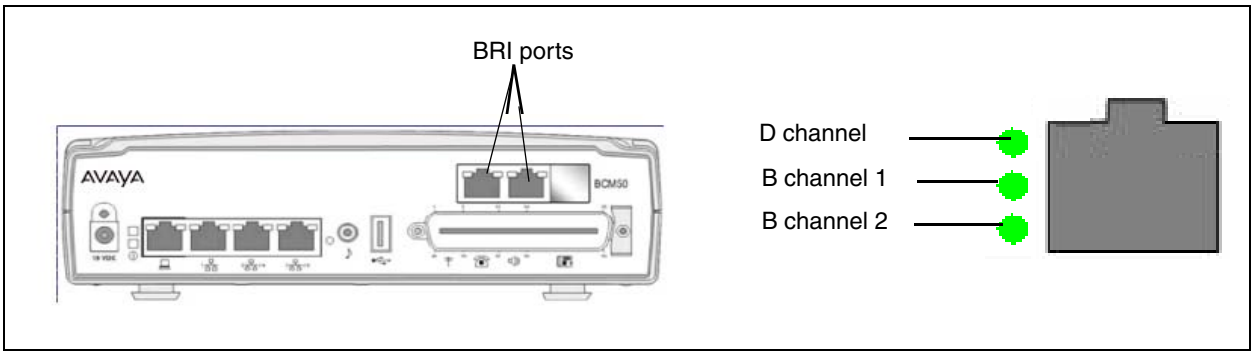
Table 11 LAN port LED indicators

LED	Status	Description
Router status	On	The router card is functioning properly.
	Off	The router card is not ready or malfunctioned.
	Flashing	The router card is rebooting.
WAN port yellow	On	The WAN port is operating at 10 Mb/s.
WAN port green	On	The WAN port is operating at 100 Mb/s.
Any WAN port LED	Flashing	The WAN port is sending or receiving network data. The frequency of the flashes increases with increased traffic.
Both WAN port LEDs	Off	No connection.

BRI port LEDs on main unit (BRI series only)

The three BRI port LEDs on the Avaya BCM50b, BCM50ba, and BCM50be main units monitor the BRI port status. The figure Ethernet router LEDs on the BCM50e and BCM50be main units (BCM50e shown) on page 60 shows the location of the BRI ports and LEDs.

Figure 29 BRI port LEDs on the BCM50b, BCM50ba, and BCM50be main units (BCM50b shown)



The table BRI port LED indicators on page 61 describes the possible BRI port LED states.

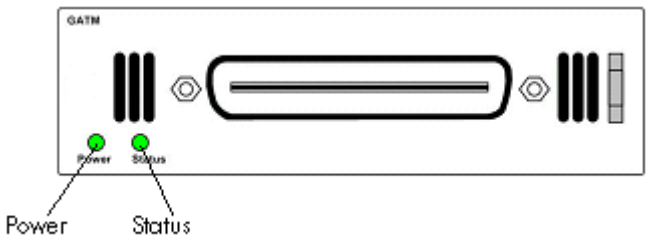
Table 12 BRI port LED indicators

LED (channel)	Status	Description
D	On (green)	D channel is functioning through this BRI port.
B1	On (green)	B channel 1 is functioning through this BRI port.
B2	On (green)	B channel 2 is functioning through this BRI port.

Media bay module LEDs (expansion units only)

The two media bay module (MBM) LEDs on an expansion unit show the power and status of the MBM. The figure MBM LEDs on page 61 shows the location of the ⏻ (Power) and Status LEDs on an MBM. The power and status LEDs are in the same location on all MBMs.

Figure 30 MBM LEDs



The table MBM LED descriptions on page 62 describes the possible MBM LED states.

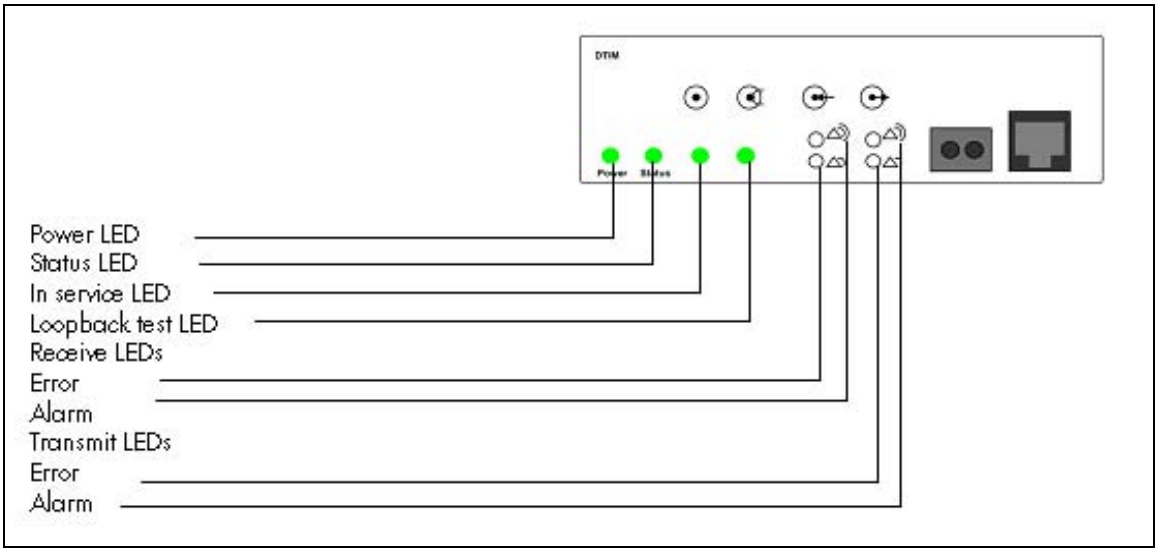
Table 13 MBM LED descriptions

Power	Status	Description
Off	Off	The MBM has no power, or a failure occurred on the MBM power converter.
On	Off	BCM50 to expansion unit failure or system initialization.
On	Blinking	Hardware is working, but an operational problem exists such as: • no link to the main unit is detected • frame alignment is lost on messages from the main unit • bandwidth not allocated • MBM is in maintenance state • MBM is in download state (GASM, GATM4/GATM8)
Blinking	Blinking	The MBM has power, but a hardware problem exists such as: • partial failure of power converter • thermal overload • fan failure
On	On	The MBM is ready to operate.

DTM LEDs

The DTM has additional LEDs that are not on most other MBMs. The figure DTM LEDs on page 62 shows the location of the DTM LEDs.

Figure 31 DTM LEDs



The table DTM LED functions on page 63 describes the functions of the DTM LEDs.

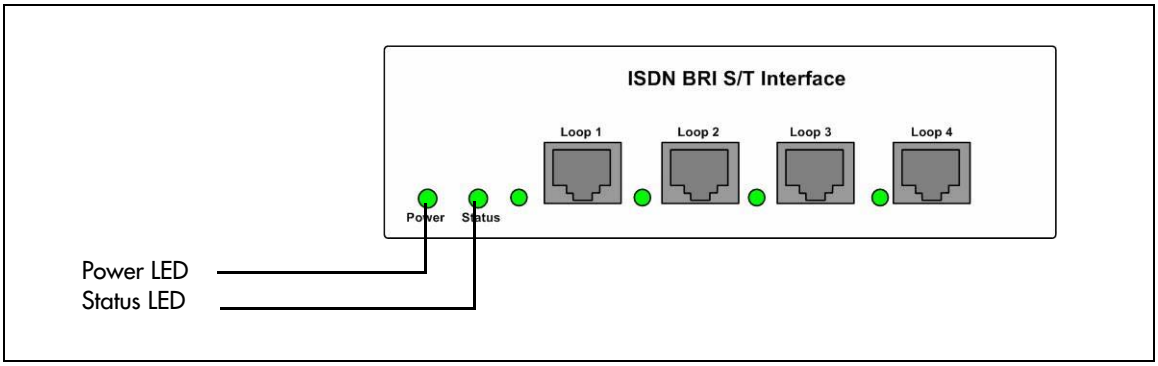
Table 14 DTM LED functions

LED	Status	Descriptions
Power	–	See "Media bay module LEDs (expansion units only)" for details.
Status	–	See "Media bay module LEDs (expansion units only)" for details.
In service	Flashing	The T1, ETSI, or PRI trunks are out of service because a loopback test is running or the DTM is initializing.
Loopback test	On	A continuity loopback test is running.
Receive alarm	On	A problem with the received digital transmission. This half-duplex link does not work.
Receive error	On	A small error as a result of degraded digital transmission. Possible causes are an ohmic connection, water ingress, or too long a loop.
Transmit alarm	On	The DTM cannot transmit. The DTM sends an alarm indication signal (AIS) to the terminating switch. This half-duplex link does not work.
Transmit error	On	The DTM is sending a remote alarm indication (RAI) carrier failure alarm (CFA) to the terminating switch. If the transmit alarm is not on, this error indicates a far-end or cable problem.
All LEDS	Flashing	The DTM is initializing.

BRIM LEDs

The BRIM has one additional LED beside each RJ-48C jack. These LEDs are on when the ISDN line is active. The figure BRIM LEDs on page 63 shows the location of the LEDs on a BRIM.

Figure 32 BRIM LEDs



For more information on the power and status LED functions, see Media bay module LEDs (expansion units only) on page 61.

Chapter 4
Determining DHCP server configuration and IP address

Each main unit has a dynamic host configuration protocol (DHCP) server. This DHCP server supplies Avaya IP Deskphones and client computers with IP addresses and connection information.

If the main unit has no integrated router, then you can configure the DHCP server using Business Element Manager.

If the main unit has an integrated router, then you can activate either the DHCP server on the main unit or the DHCP server on the integrated router. If you want to use the DHCP server on the main unit, you must first disable the DHCP server on the integrated router.

For more information about configuring the DHCP server, see the procedure To configure DHCP server settings on page 139.

The Avaya Business Communications Manager 50 (Avaya BCM50) system can have a main unit with or without an integrated router:

- Avaya BCM50 and Avaya BCM50b main units (no integrated router) on page 65
- BCM50a, BCM50ba, BCM50e, and BCM50be main units (with integrated router) on page 66

Avaya BCM50 and Avaya BCM50b main units (no integrated router)

By default, the main unit is configured with a dynamic IP address, which means the IP configuration is received from a DHCP server.

The BCM50 and BCM50b main units can have two DHCP server configurations:

- If an external DHCP server is not present on page 65
- If an external DHCP server is present on page 66

If an external DHCP server is not present

If an external DHCP server is not present, then the main unit uses the following default IP configuration:

IP address:	192.168.1.2
Subnet mask:	255.255.255.0
Gateway:	192.168.1.1

The DHCP server on the main unit supplies IP configuration information for all IP devices (PCs and IP Deskphones). The DHCP server also supplies specific connection information to the IP Deskphones.

If an external DHCP server is present

Warning: The DHCP server on the main unit is enabled (IP Deskphones only) by default. If your network already contains a DHCP server, then disable the DHCP server on the main unit. For more information about disabling the DHCP server on the main unit, see the procedure To configure DHCP server settings on page 139.

If an external DHCP is present, then the Avaya BCM50 system uses the IP configuration supplied by the external DHCP server. In this case, the DHCP server on the main unit supplies only IP Deskpones with IP configuration information. The DHCP server on the main unit does not supply any other devices with IP settings. This means that the administrator need not set up the external DHCP server to supply configuration settings to the IP Deskphones.

The DHCP server on the main unit must configure a range of IP addresses to supply to the IP Deskphones. The DHCP server uses the top 20 percent of a subnet.

For example, if the external DHCP server supplies the IP address 177.218.21.45 (subnet mask is 255.255.255.0) to the Avaya BCM50, then the BCM50 DHCP server reserves the range 177.218.21.200 to 177.218.21.254.

You can verify and change this default range using Business Element Manager.

The administrator must ensure that this range agrees with the network configuration—the external DHCP server does not use the range.

BCM50a, BCM50ba, BCM50e, and BCM50be main units (with integrated router)

You can select the DHCP server option to use with the Avaya BCM50 integrated router main units. You can select to use the integrated router or you can disable the integrated router and use the DHCP server that is on the main unit. Select the DHCP server option through Business Element Manager (Configuration > Data Services > DHCP Server > General Settings tab).

If you select the standard DHCP server on the main unit, you must first disable the DHCP server on the integrated router. You can then configure the DHCP server functionality in the same way as a non-router version.

If you select the DHCP server on the integrated router you can configure the router using the router WebGUI tool.

By default, the integrated router is selected and you configure the BCM50a, BCM50ba, BCM50e, and BCM50be main units with a dynamic IP address, meaning that these units request an IP configuration from a DHCP server. Because the integrated router has a DHCP server, this DHCP server responds to the request.

By default, the router LAN IP address is 192.168.1.1, and the IP address assigned to the Avaya BCM50 system is the first IP address in the DHCP pool. If the DHCP pool starts at 192.168.1.190, then the BCM50 is 192.168.1.190 even though the router is 192.168.1.1. Therefore, the Avaya BCM50 system receives the IP address 192.168.1.2 (subnet mask is 255.255.255.0) from the DHCP server on the integrated router.

The DHCP server on the integrated router supplies the information (primary and secondary TPS server information, VLAN IDs) to the IP Deskphones enabling the phones to connect to the BCM50. If the IP address of the integrated router changes, then the IP address reserved for the BCM50 automatically changes. The DHCP server on the integrated router automatically updates the S1 and S2 IP address.

For more information about configuring a DHCP server for your Avaya BCM50 main unit, see the procedure To configure DHCP server settings on page 139.

Chapter 5
Installing the Avaya BCM50 system

To install an Avaya Business Communications Manager 50 (Avaya BCM50) system, you must install an Avaya BCM50 main unit, any expansion units required, and the telephony components.

The figure BCM50 installation overview on page 69 and the table BCM50 installation overview on page 70 provide an overview of the installation process.

Figure 33 BCM50 installation overview

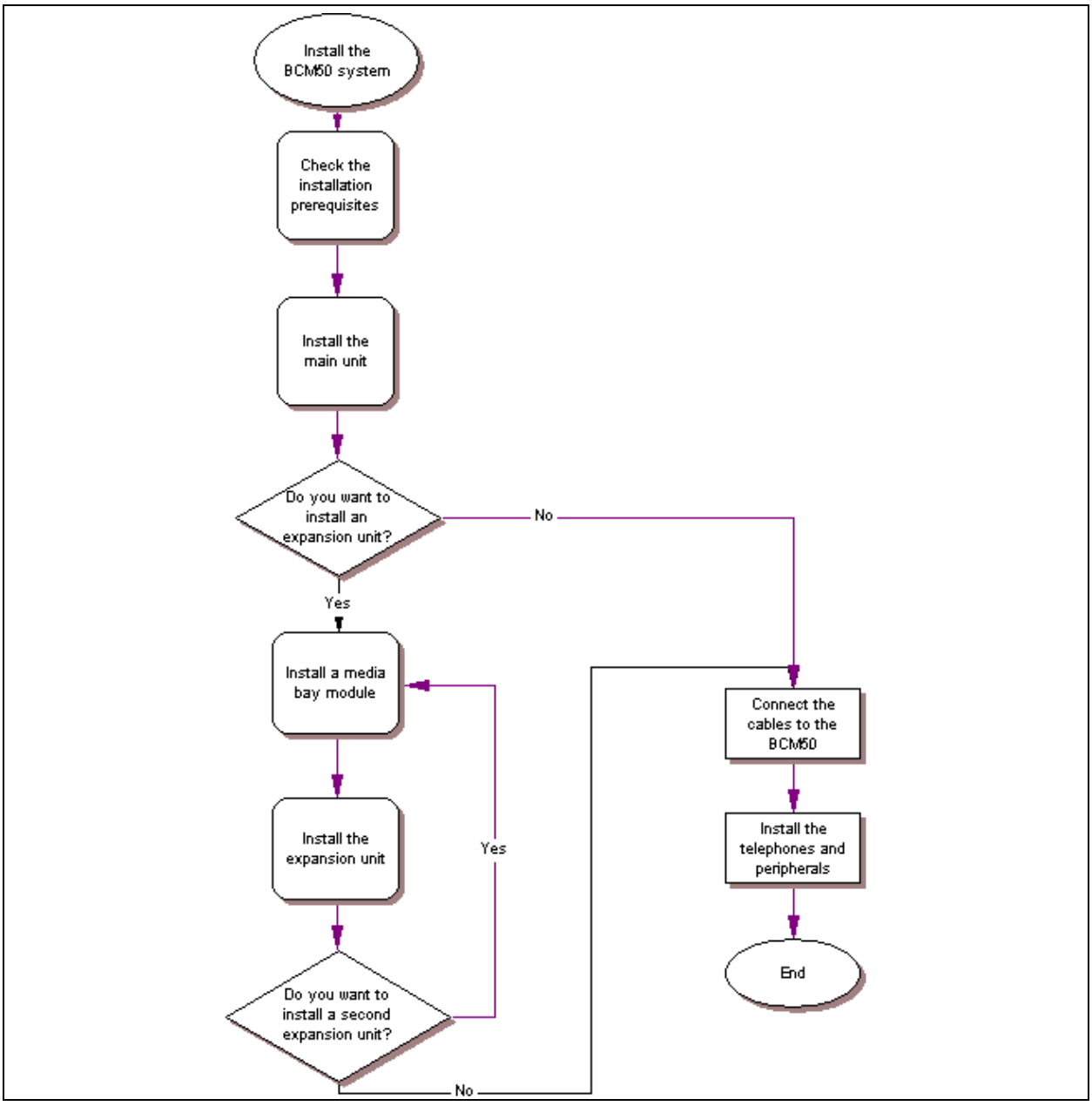


Table 15 BCM50 installation overview (Sheet 1 of 2)

Tasks	Description	Refer to
Prepare for installation	Verify these requirements: • environmental • electrical • site telephony wiring	Checking the installation prerequisites on page 73
Get required equipment and tools	Ensure you have these items: • basic hardware • optional equipment • other hardware and tools	System equipment, supplies, and tools on page 75
Inspect the components	Verify that the main unit box contains all the required components in good condition.	Unpacking the main unit on page 78
Install the main unit	Mount the main unit using these options: • in an equipment rack with a rack-mount shelf (optional patch panel) • on a wall with a wall-mount bracket (optional wiring field card) • on a desktop	Installing the main unit on page 77
Inspect the components	Verify that the expansion unit box contains all the required components in good condition.	Unpacking the expansion unit on page 93
Install a media bay module (MBM)	Follow these steps to install an MBM: • set the MBM dip switches to factory default • insert the MBM into the expansion unit	Verifying the media bay module switch settings on page 93
Install an expansion unit	Mount the expansion unit using the same option as the main unit: • in an equipment rack with a rack-mount shelf (optional patch panel) • on a wall with a wall-mount bracket (optional wiring field card) • on a desktop • on top of another unit (not for wall-mount option)	Installing the expansion unit on page 98
Connect the cables	Connect the cables between these items: • main unit to expansion unit (if required) • power supply to units (with and without a UPS) • lines and extensions to the RJ-21 telephony connector (optional patch panel or WFC) • lines and extensions to the MBMs • auxiliary equipment to the RJ-21 telephony connector (optional patch panel or WFC)	Connecting the cables to the Avaya BCM50 system on page 99

Table 15 BCM50 installation overview (Sheet 2 of 2)

Tasks	Description	Refer to
Install telephones and peripherals	You can install these telephones: • System telephones • Emergency telephone • IP Deskphones • Avaya 7406 cordless system	Installing telephones and peripherals on page 115
Install an ATA2	Perform these steps to install an ATA2: • connect the ATA2 • mount the ATA2 • test insertion loss measurement • configure the ATA2	Installing the analog terminal adapter on page 117

Chapter 6
Checking the installation prerequisites

Before you install a main unit or expansion unit, perform the following tasks:

- Determine the location for the Avaya Business Communications Manager 50 (Avaya BCM50) units, telephones, and other equipment based on space and electrical requirements.
- Order the required trunks from the central office.
- Ensure that you have all the equipment and supplies you need to install the system.

For information about Avaya BCM50 installation prerequisites:

- Environmental requirements on page 73
- Electrical requirements on page 73
- Site telephony wiring requirements on page 74
- System equipment, supplies, and tools on page 75

Environmental requirements

Ensure you meet the installation environmental requirements. The installation area must be:

- a minimum of 4 m (13 ft.) from equipment such as photocopiers, electrical motors, and other equipment that produces electromagnetic, radio frequency, and electrostatic interference
- within 1.5 m (5 ft.) of a three-wire grounded electrical outlet
- clean, dry, well ventilated, and free of traffic and excess dust
- within the temperature range of 5°C and 50°C (40°F and 120°F)
- from 20% to 80% non condensing relative humidity
- structurally strong and with enough space to support the BCM50 units
- a minimum of 46 cm (18 in.) from the floor



Note: The installation area must be of sufficient height from the floor to prevent water damage.

Electrical requirements

Ensure you meet the following electrical requirements:

- Power must be supplied from a non switched, unobstructed outlet within 1.5 m (5 ft.) of the Avaya BCM50 units.
- The supplied power must be a dedicated 110 V to 120 V AC nominal (or 220 V to 240 V AC nominal), 50 to 60 Hz, 15 A minimum service with a third-wire safety ground. The third-wire safety ground provides shock protection and prevents electromagnetic interference.

Danger: Risk of electric shock

The safety of this product requires connection to an outlet with a third-wire ground. Use only with the supplied Avaya BCM50 power supply and a three-wire power outlet.

Caution: Check ground connections

Ensure that the electrical ground connections of the power utility, telephone lines, and internal metal water pipe system, if present, are connected. If these ground connections are not connected, contact the appropriate electrical inspection authority. Do not try to make the connections yourself.

You can connect the power supply to a power bar. The total length of the power cables from the power supply to the electrical outlet (including power bar) must not exceed 2 m (6.5 ft.). You must use a power bar approved by an appropriate National Test Body, with a third-wire ground. Avaya recommends that you do not use an extension cord between the power supply and the power bar or between the power bar and the electrical outlet.

Site telephony wiring requirements

The following sections describe the requirements for wiring digital telephony devices (digital loop) and analog telephony devices (analog loop) to the Avaya BCM50 system:

- Digital loop on page 74
- Analog loop on page 74

Digital loop

You must meet the following parameters for a digital loop:

- one, two, or three twisted-pair cables per telephone
- DC loop resistance of less than 64 Ω
- cable length (0.5 mm or 24-AWG) less than 300 m (975 ft.)
- use of a station auxiliary power supply (SAPS) for loops 300 m (975 ft.) to 1200 m (3900 ft.). In North America, the SAPS must be a CSA- or UL-approved Class 2 power source. In Europe, the SAPS must be a Class II power source and CE marked.
- no bridge taps

Analog loop

You must meet the following parameters for an analog loop:

- maximum DC loop resistance of 208 Ω
- maximum cable length (0.5 mm or 24-AWG) of 1220 m (4000 ft.)

System equipment, supplies, and tools

For the equipment required to install the Avaya BCM50 system:

- Basic hardware on page 75
- Optional equipment on page 75
- Other hardware and tools on page 75

Basic hardware

The Avaya BCM50 system comprises a combination of the following hardware:

- main unit: BCM50, BCM50a, BCM50e, BCM50b, BCM50ba, or BCM50be
- expansion unit
- media bay module (MBM)
- telephones
- cabling for connections between hardware units

You can connect a maximum of two expansion units to a BCM50 system. Each expansion unit can contain one MBM.



Note: You require keycodes for some hardware to function.

Optional equipment

You can add the following equipment to the Avaya BCM50 system to support specific requirements beyond the basic hardware:

- station auxiliary power supply (SAPS)
- analog terminal adapter 2 (ATA2) if you connect analog equipment to a digital extension line
- uninterruptable power supply (UPS)
- USB hub (required if the system uses a UPS)

Other hardware and tools

You need the following equipment to install a Avaya BCM50 unit:

- mounting hardware
  (either a rack-mount shelf, a wall-mount bracket per unit, or four rubber feet per unit)
- Phillips #2 screwdriver
- flat blade screwdriver
- pliers
- antistatic grounding strap
- punch-down tool

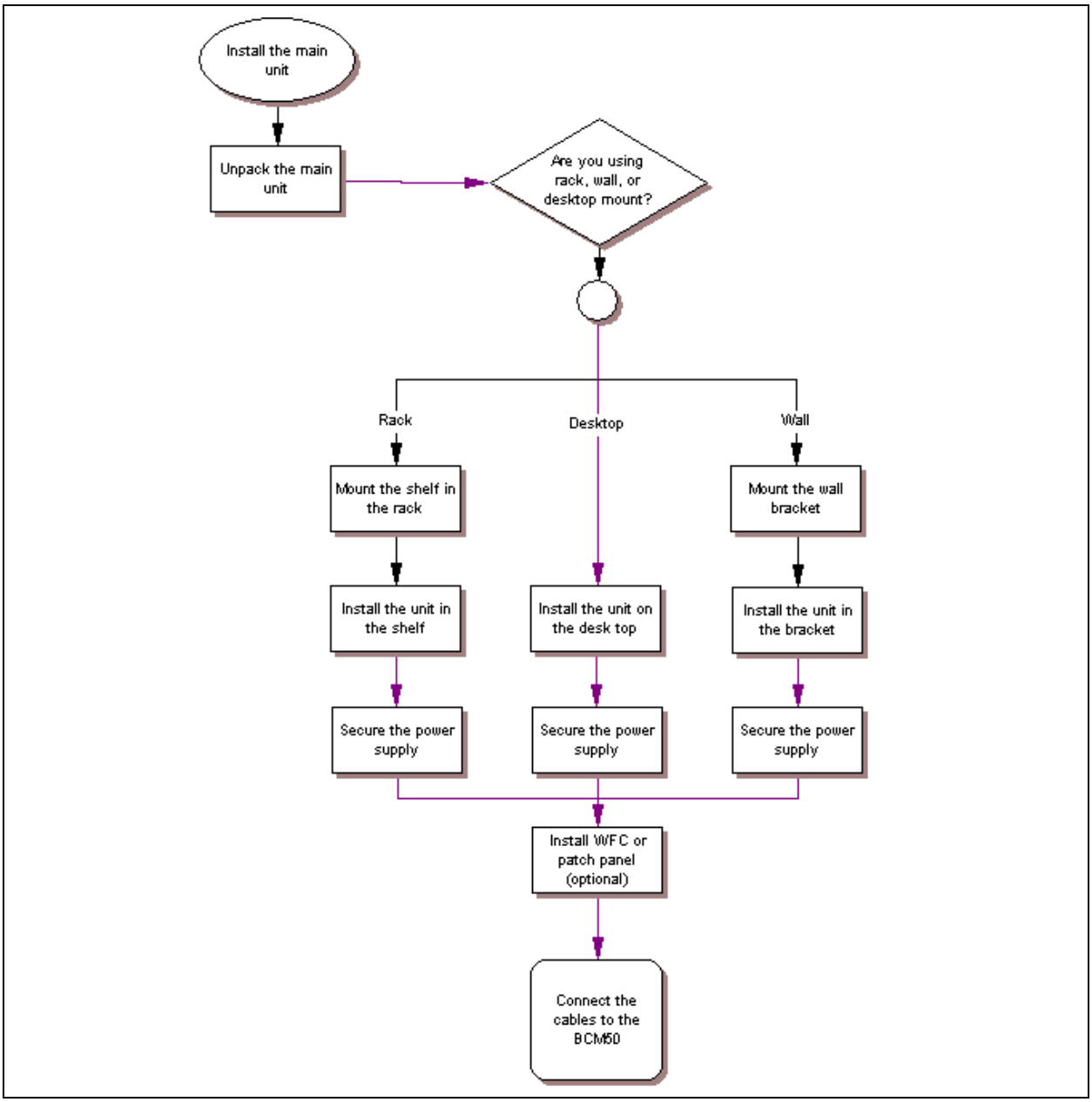
- surge protector (recommended)
- cables, 25-pair cable with right-feeding female RJ-21 connectors
- 3.5-mm mono audio jack (for external music source)

Chapter 7
Installing the main unit

This section describes how to install the main unit. You can install the main unit in an equipment rack, on a wall, or on a desktop.

The figure Overview of installing the main unit on page 77 shows the steps required to install the main unit.

Figure 34 Overview of installing the main unit


Install the main unit
Unpack the main unit
Are you using rack, wall, or desktop mount?
Rack
Desktop
Wall
Mount the shelf in the rack
Mount the wall bracket
Install the unit in the shelf
Install the unit on the desk top
Install the unit in the bracket
Secure the power supply
Secure the power supply
Secure the power supply
Install WFC or patch panel (optional)
Connect the cables to the BCM50

For information about installing the main unit:

- Unpacking the main unit on page 78
- Installing the Avaya BCM50 unit in an equipment rack on page 78
- Installing the Avaya BCM50 unit on the wall on page 82
- Installing the Avaya BCM50 unit on a desktop or shelf on page 87

Unpacking the main unit

Open the main unit box and check that you have all of the following components:

- one main unit (either BCM50, BCM50a, BCM50e, BCM50b, BCM50ba, or BCM50be)
- one power supply
- one power supply cable
- one power supply retention clip
- four rubber feet
- one screw to secure the RJ-21 telephony connector
- one cable tie
- a documentation CD
- the *Avaya BCM50 Installation Checklist and Quick Start Guide*

Visually inspect the components for damage during shipping.

If you find damage, contact your Avaya sales representative.

Installing the Avaya BCM50 unit in an equipment rack

You can install an Avaya Business Communications Manager 50 (Avaya BCM50) main unit in a standard 19-inch equipment rack along with your other networking and telecommunications equipment.

To rack-mount an Avaya BCM50 unit, you need the optional rack-mount kit (NT9T6325). This kit provides the parts to mount up to four BCM50 units into a standard 19-inch equipment rack. The BCM50 unit mounts into the tabs on the rack-mount shelf. These tabs prevent the unit from sliding around or falling off the shelf. If the BCM50 system includes additional units, you can mount another unit onto a second set of tabs on the rack-mount shelf. You can mount any additional units to tabs on the top of the other units.

If you need to better secure a BCM50 unit, use the screws provided (four per unit) to screw the BCM50 to the rack. This is a “hardened” installation. For a hardened installation, install only two units per rack—do not stack the units.

You can also use the optional patch panel to simplify the connections to the BCM50 RJ-21 telephony connector.

Caution: For acceptable environmental conditions before selecting a location for the Avaya BCM50 system, see Checking the installation prerequisites on page 73.

Caution: To keep the BCM50 system operating at the optimal internal temperature, keep the top, sides, and rear clear of obstructions and away from the exhaust of other equipment.

Place no objects, except another BCM50 unit or a power supply mounting enclosure, on top of the main unit.

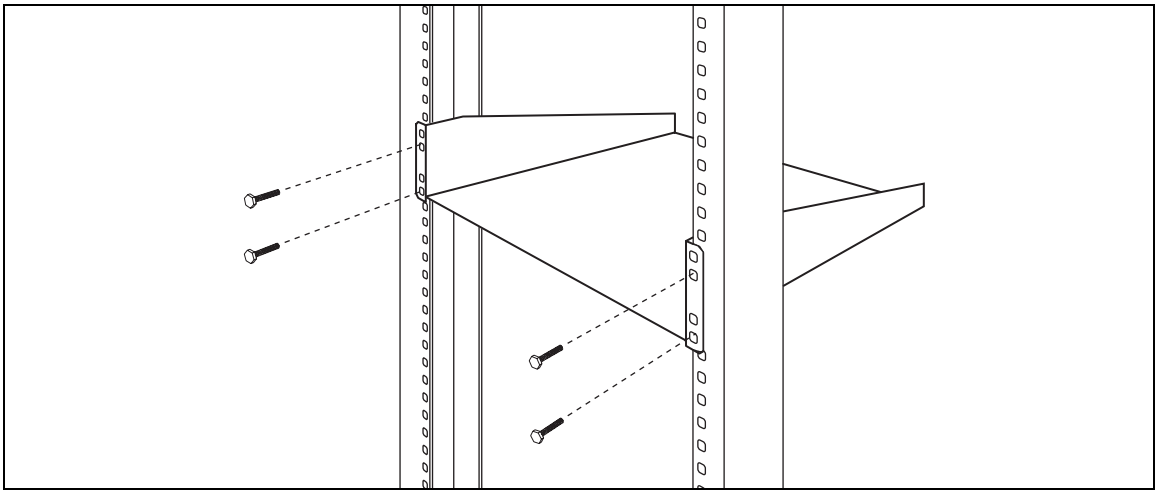
Use the following procedures to install an Avaya BCM50 unit in a rack:

- To install the rack-mount shelf in an equipment rack on page 79
- To install the Avaya BCM50 unit on the rack-mount shelf on page 80
- To install the power supply on the rack-mount shelf on page 89

To install the rack-mount shelf in an equipment rack

1. Determine the location in the rack where you want to install the Avaya BCM50 unit.
2. Position the rack-mount shelf in the rack.
3. Align the holes in the rack-mount shelf with the holes in the equipment rack rails.
4. Fasten the rack-mount shelf to the rack using the four rack screws (supplied with the rack-mount kit). See the figure Fasten the rack-mount shelf to an equipment rack on page 79.
5. Proceed to Installing the Avaya BCM50 unit on the rack-mount shelf on page 80.

Figure 35 Fasten the rack-mount shelf to an equipment rack



Installing the Avaya BCM50 unit on the rack-mount shelf

The rack-mount shelf has slots molded into its surface to which you attach the Avaya BCM50 units. By attaching the BCM50 units to these slots, you can prevent someone from accidently knocking them off the rack-mount shelf.

If you install additional units, you can install a second unit on the shelf beside the first unit. You can install another unit on top of each of the first two units. Avaya recommends a maximum of four units per rack-mount shelf.

Select your installation option:

- To install the Avaya BCM50 unit on the rack-mount shelf on page 80
- To install an Avaya BCM50 unit on top of another unit on page 81

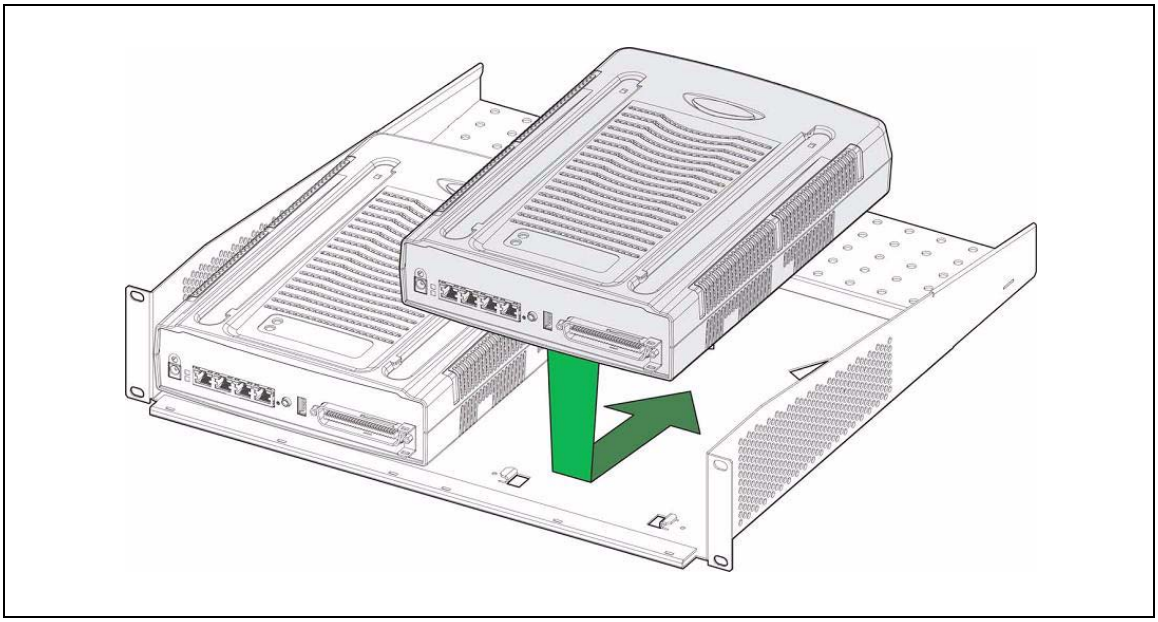
To install the Avaya BCM50 unit on the rack-mount shelf

1. Place the Avaya BCM50 unit on the rack so that the feet of the unit are in the depressions in the shelf.
2. Move the unit forward until the feet touch the front side of the depressions.
3. Slide the unit back until the feet click in place on the slots in the depressions. See the figure Attach the units to the rack-mount shelf on page 81.
4. To further secure the unit, use the four self-tapping screws (for plastic) supplied with the rack-mount kit to attach the unit to the rack-mount shelf. Make sure the screw holes in the unit are aligned with the holes in the rack-mount shelf. Then insert the four screws through the holes in the bottom of the shelf and into the screw holes in the bottom of the unit.

   Caution: Use only the screws supplied with the rack-mount kit (NT9T6325). Do not replace the screws. Other screws can damage the unit.

5. Install the power supply using a method appropriate for your installation. For details about installation options, see Installing the Avaya BCM50 power supply on page 88.

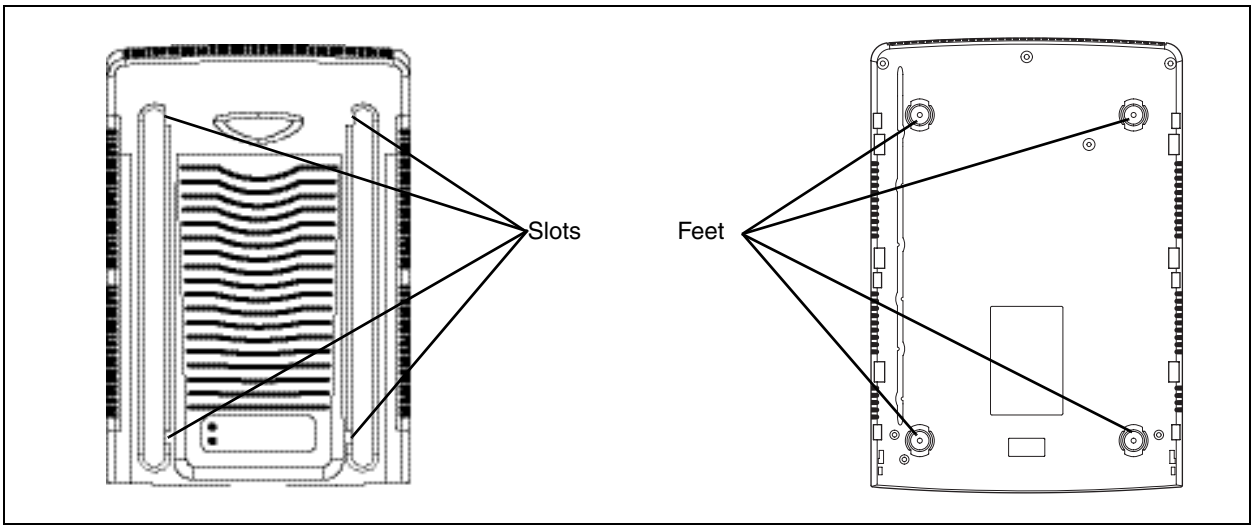
Figure 36 Attach the units to the rack-mount shelf



To install an Avaya BCM50 unit on top of another unit

1. Insert the power supply retention clip into the Avaya BCM50 unit.
2. Place the BCM50 unit on top of the other unit. Make sure the feet of the unit are in the slots on the top of the unit and in front of the slots. See the figure BCM50 unit slots and feet on page 81.
3. Slide the unit back until it clicks in place on the slots.
4. Install the power supply using a method appropriate for your installation. For details about installation options, see Installing the Avaya BCM50 power supply on page 88.

Figure 37 BCM50 unit slots and feet



Installing the patch panel (optional)

Install the optional patch panel in the equipment rack.

To install the patch panel

1. Determine the location in the rack where you want to install the patch panel.
2. Position the patch panel in the rack.
3. Align the holes in the patch panel with the holes in the equipment rack rails.
4. Fasten the patch panel to the rack using the four rack screws (supplied with the patch panel).
5. Continue with the procedure To connect the cables to the patch panel (optional) on page 113.

Installing the Avaya BCM50 unit on the wall

To wall-mount an Avaya BCM50 unit, you need a wall-mount bracket. The wall-mount bracket attaches to the wall, and the BCM50 unit connects to the wall-mount bracket. If the BCM50 system includes additional units, you need a wall-mount bracket for each unit. Each wall-mount bracket includes a cable-management tray that you use to store and organize the cables connected to the BCM50 units. An optional wiring field card simplifies the cable connections for the lines and extensions.

If desired you can install an optional plywood backboard 2 cm (3/4 in.) thick.



Caution: For acceptable environmental conditions before selecting a location for the BCM50, see Checking the installation prerequisites on page 73.



Caution: You must mount Avaya BCM50 units side-by-side on the wall. DO NOT attempt to mount units on top of each other when using the wall-mount option.



Caution: To keep the BCM50 operating at the optimal internal temperature, keep the top, sides, and rear clear of obstructions and away from the exhaust of other equipment.

Use the following procedures to install the Avaya BCM50 unit on a wall:

- To install the Avaya BCM50 wall-mount bracket on page 83
- To install the Avaya BCM50 unit on the wall-mount bracket on page 84

To install the Avaya BCM50 wall-mount bracket

1 Use a pencil to mark the location of the plywood backboard on the wall. Use a ruler and a level to make sure that the plywood backboard is level.

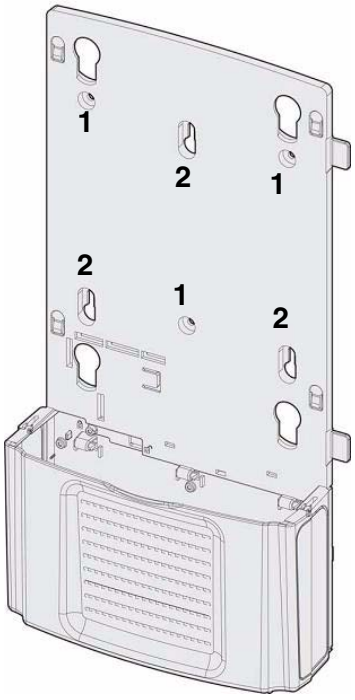
Note: Avaya recommends the use of a plywood backboard to simplify installing multiple Avaya BCM50 units. However, due to the compact size and light weight of the BCM50 units, a backboard is not required.

If you do not use a backboard, use the appropriate wall anchors or ensure the screws are in a stud.

2 Mount the plywood backboard securely to the wall.

3 Place the wall-mount bracket on the backboard and mark the location of the center keyhole-shaped screw hole on the plywood backboard. See the figure Wall-mount bracket on page 83.

Figure 38 Wall-mount bracket



Attach the wall-mount bracket with 5 screws:

- Two screws mount through the cable trough (open the cable-management door).
- Three screws mount as shown in the figure.

Note: When you use three screws, Avaya recommends installing the screws in the three holes labeled "1" or the three holes labeled "2".

4 Prepare the wall-mount bracket by removing the alignment tabs:

- If this is the only unit in the Avaya BCM50 system, remove the alignment tabs on the right side of the wall-mount bracket.
- If this is the last unit on a BCM50 system with multiple units, remove the alignment tabs on the left side of the wall-mount bracket.

Place the additional wall-mount bracket on the backboard on the right side of the existing wall-mount bracket. Use the alignment tabs to ensure the two wall-mount brackets are properly aligned.

If these options do not meet your requirements, other options are available. For example, you can route the Amphenol connector cable to the left of the unit, or you can route the cable straight down the wall.

5 Attach the wall-mount bracket with five #8 x 2 cm (#8 x 0.75 in.) round-head wood screws:

- **a** Install one screw in the backboard. Do not tighten the screw head against the backboard. Leave approximately 0.5 cm (0.25 in.) of the screw exposed from the backboard.
- **b** Hang the wall-mount bracket on the mounting screw.
- **c** Use a level to make sure the wall-mount bracket is level.
- **d** Install two screws into the screw holes in the wall-mount bracket. See the figure Wall-mount bracket on page 83.
- **e** Tighten the wood screws against the wall-mount bracket.
- **f** Open the cable-management door.
- **g** Install two screws into the screw holes in the cable trough.

6 If the Avaya BCM50 system has only one unit, go to the procedure To install the Avaya BCM50 unit on the wall-mount bracket on page 84.
If the BCM50 system has more than one unit, repeat steps 3 to 6 for each wall-mount bracket.

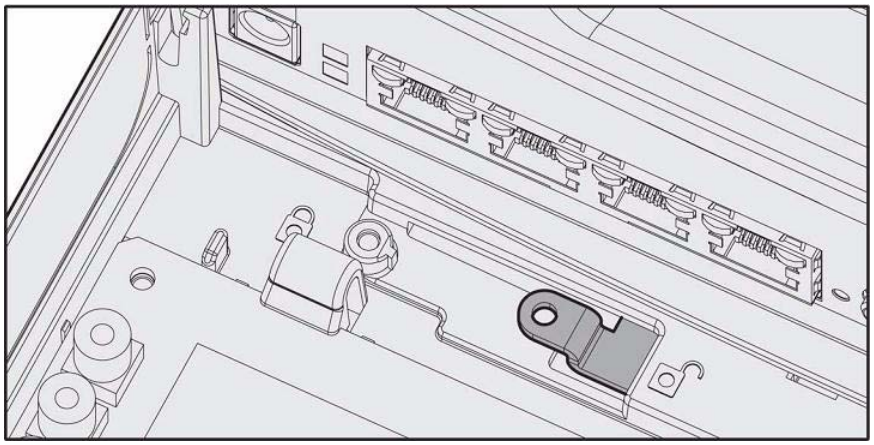
7 Go to the procedure To install the Avaya BCM50 unit on the wall-mount bracket on page 84.

To install the Avaya BCM50 unit on the wall-mount bracket

1 Insert the power supply retention clip into the BCM50 unit.

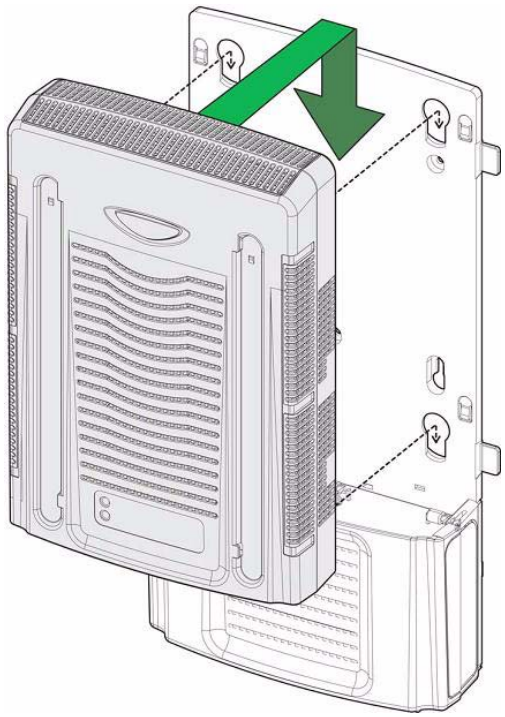
2 Slide the wall-mount lock fully to the right (unlock position). See the figure Wall-mount lock in unlock position on page 84.

Figure 39 Wall-mount lock in unlock position



3 Align the feet on the BCM50 unit with the four holes in the wall-mount bracket. See the figure Attach the BCM50 unit to the wall-mount bracket on page 85.

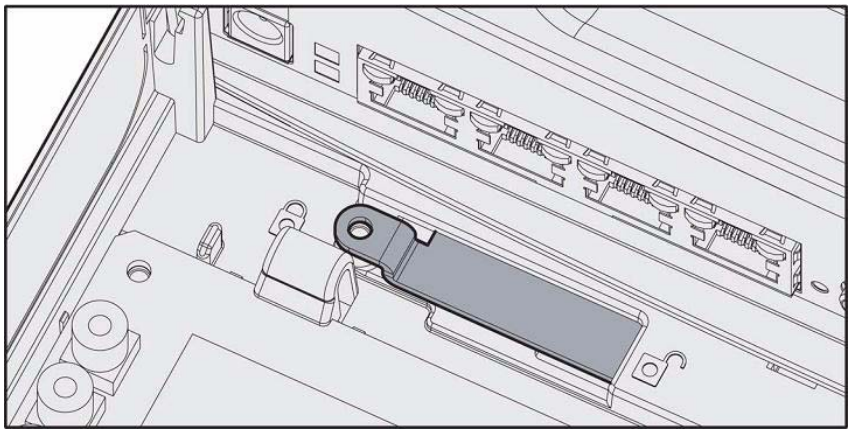
Figure 40 Attach the BCM50 unit to the wall-mount bracket



4 Press the unit against the wall-mount bracket and slide the unit down until it clicks in place.

5 Slide the wall-mount lock to the left (lock position). See the figure Wall-mount lock in lock position on page 85.

Figure 41 Wall-mount lock in lock position



6 Use the supplied screw to secure the wall-mount lock in position.

7 Repeat steps 1 to 6 for each additional BCM50 unit you install.

8 Install the power supply using a method appropriate for your installation. For details about installation options, see Installing the Avaya BCM50 power supply on page 88.

Installing the wiring field card (optional)

Install the optional wiring field card (WFC) in the cable-management tray of the main unit.

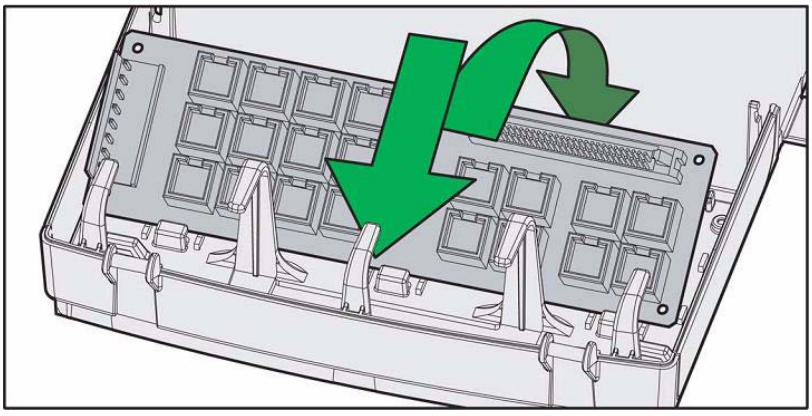
To install the WFC

1 Clear the WFC installation area of all cables.

2 Place the WFC in the installation area with the 50-pin header at the top.

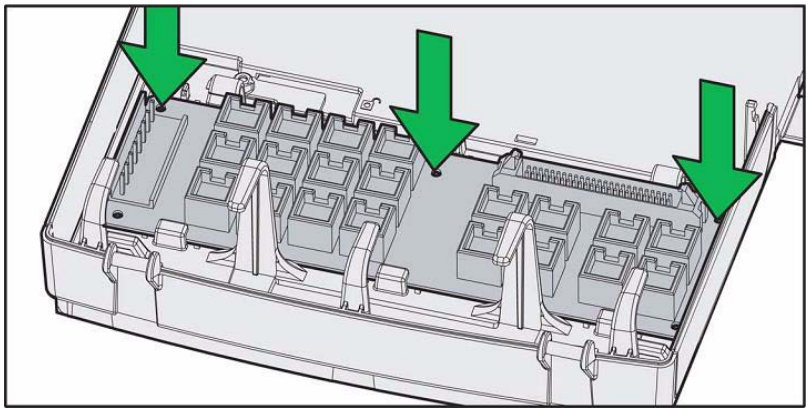
3 Slide the WFC down until it is at the bottom of the installation area and held in place by the three clips. See the figure Slide in the WFC on page 86.

Figure 42 Slide in the WFC



4 Press the WFC firmly at the top left corner, center, and right tabs.
The WFC snaps into place. See the figure Snap the WFC into place on page 86.

Figure 43 Snap the WFC into place



5 Optional—Install the three screws to secure the WFC in place.

6 Continue with the procedure To connect the cables to the wiring field card (optional) on page 113.

Installing the Avaya BCM50 unit on a desktop or shelf

To mount an Avaya BCM50 unit on a desktop or shelf, attach the supplied rubber feet to the bottom of the unit. If the BCM50 system includes additional units, you can set the additional units beside, or stack them on top of, the first unit. If you are mounting the additional units beside the first unit, attach the supplied rubber feet to the bottom of each unit. If you are stacking the additional units on top of the first unit, mount each unit into the tabs on top of another unit.

Caution: For acceptable environmental conditions before selecting a location for the Avaya BCM50 system, see Checking the installation prerequisites on page 73.

Note: To keep the Avaya BCM50 unit operating at the optimal internal temperature, keep the top, sides, and rear clear of obstructions and away from the exhaust of other equipment.

Place no objects, except another BCM50 unit or a power supply mounting enclosure, on top of the main unit.

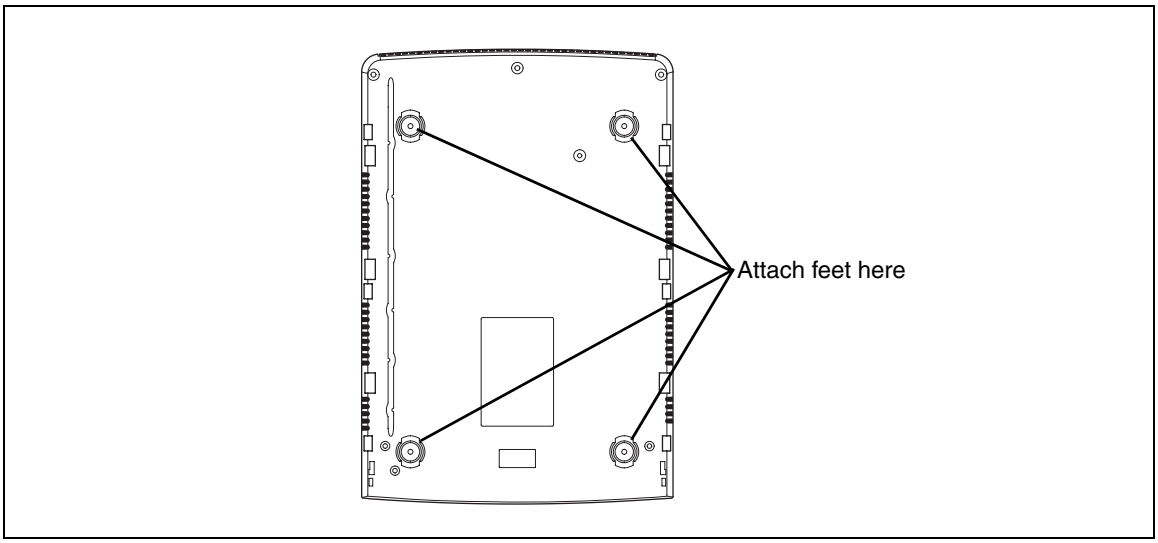
To install the Avaya BCM50 unit on a desktop or shelf

To install the BCM50 unit on a desktop or shelf:

1 Insert the power supply retention clip into the BCM50 unit.

2 Attach the four self-adhesive rubber feet to the bottom of the BCM50 unit by peeling off the paper backing and placing the feet on the unit as indicated in the figure Location for feet on the bottom of the BCM50 unit on page 88.

Figure 44 Location for feet on the bottom of the BCM50 unit



3 Position the BCM50 unit on a table or shelf. Make sure you leave enough space around the unit for ventilation and access to the cables.

4 If the BCM50 system has additional units, you can install the other units on top of, or beside, the existing BCM50 unit.

- To install the additional units beside the existing unit, repeat steps 1 to 3 for each unit.
- To install the additional units on top of the existing unit, see the procedure To install an Avaya BCM50 unit on top of another unit on page 81.

5 Install the power supply using a method appropriate for your installation. For details about installation options, see Installing the Avaya BCM50 power supply on page 88.

Installing the Avaya BCM50 power supply

There are several different ways to install a power supply. Select the method that works best for your type of installation. The power supply must be within 1.5 m (5 feet) of the BCM50 unit and within 1.5 m (5 feet) of the AC power outlet (wall outlet or UPS).

Note: Do not stack more than one Avaya BCM50 unit or power supply mounting enclosure on top of a first unit.

- For a rackmount installation you can install the power supply directly onto the rackmount shelf or you can use the power supply mounting enclosure.
- For a wallmount installation, you can use the power supply mounting enclosure (for up to three power supplies) or a single power supply mounting bracket (for a single power supply).
- For a desktop installation, you can mount them directly to the desk or you can use the power supply mounting enclosure (for up to three power supplies).

To install the power supply on the rack-mount shelf

1 Place the power supply behind the Avaya BCM50 units on the back of the rack-mount shelf.

Make sure the power supply is on its side with the label facing the back of the shelf.

2 Use two cable ties to secure the power supply to the rack-mount shelf.

3 Repeat steps 1 and 2 for each power supply you mount.

To install the power supply on the desktop

1 Place the power supply next to the Avaya BCM50 unit on the desktop. The power supply must be within 1.5 m (5 feet) of the BCM50 unit and within 1.5 m (5 feet) of the AC power outlet (wall outlet or UPS).

To install a power supply using the power supply mounting enclosure

1 Slide the Avaya BCM50 power supplies into the power supply mounting enclosure.

2 Mount the power supply mounting enclosure in the same manner as your other BCM50 units (in a rack, on a wall, or on a destop).

For more detailed installation instructions for the power supply mounting enclosure, see the *Avaya BCM50 Power Supply Mounting Enclosure* (N0118043).

To install a power supply using the single power supply mounting bracket

1 If you want to install one power supply only, use the single power supply mounting bracket.

2 Attach the single power supply mounting bracket on the wall next to your Avaya BCM50 system.

3 Snap the power supply into the power supply mounting bracket.

For more detailed installation instructions for the power supply mounting bracket, see the *Avaya BCM50 Single Power Supply Mounting Bracket* (N0130867).

Next step

If you install an expansion unit, proceed to Installing an expansion unit on page 91.

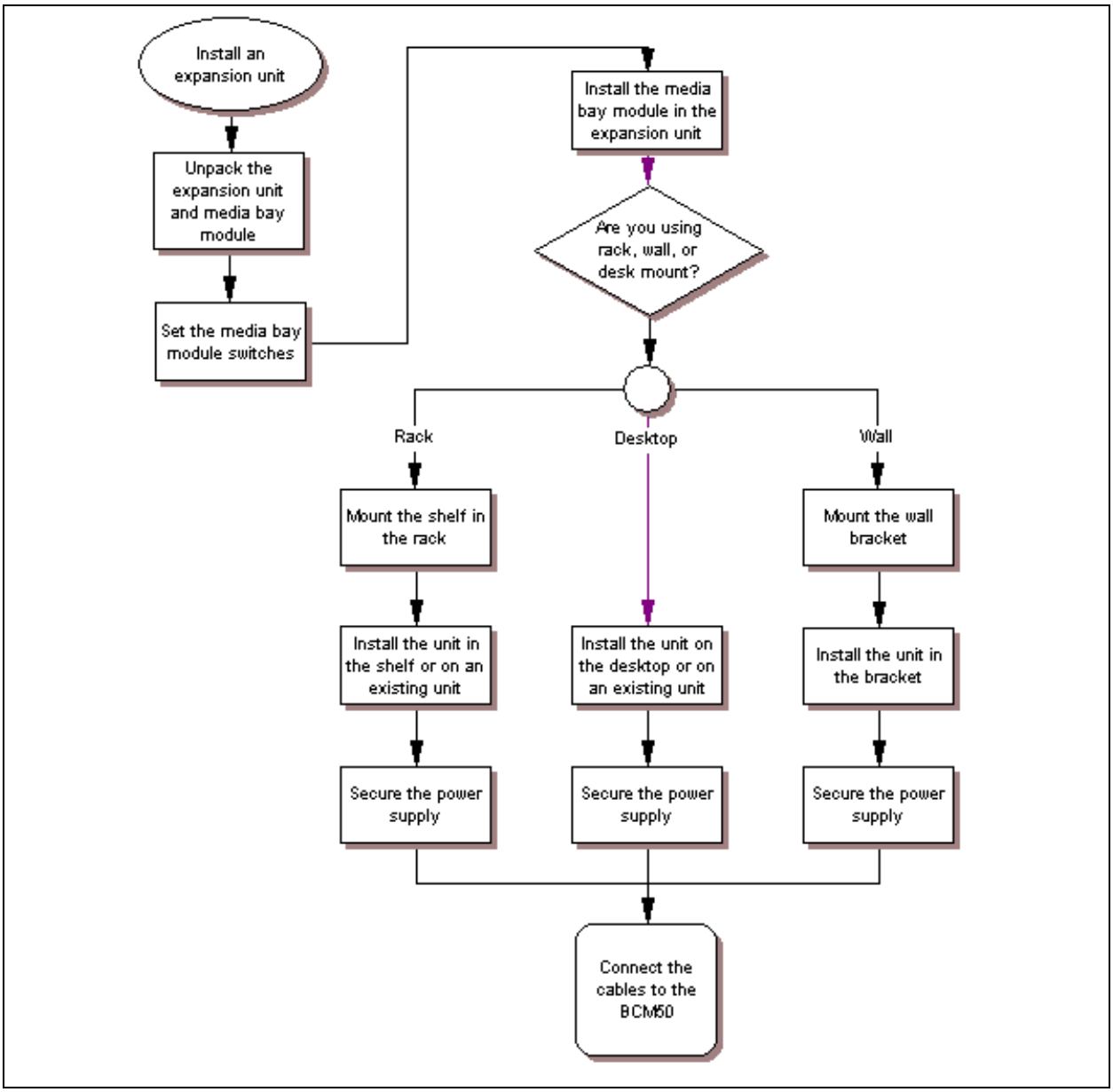
Otherwise, proceed to Connecting the cables to the Avaya BCM50 system on page 99.

Chapter 8
Installing an expansion unit

Adding an expansion unit increases the capacity of your Avaya Business Communications Manager 50 (Avaya BCM50) system by providing a method of adding a media bay module (MBM). Each MBM you add increases the number of public switched telephone network (PSTN) trunks or extensions that you can connect to the Avaya BCM50 system.

The figure Overview of installing a expansion unit on page 92 shows the steps required to install the expansion unit.

Figure 45 Overview of installing a expansion unit


Install an expansion unit
Unpack the expansion unit and media bay module
Set the media bay module switches
Install the media bay module in the expansion unit
Are you using rack, wall, or desk mount?
Rack
Desktop
Wall
Mount the shelf in the rack
Mount the wall bracket
Install the unit in the shelf or on an existing unit
Install the unit on the desktop or on an existing unit
Install the unit in the bracket
Secure the power supply
Secure the power supply
Secure the power supply
Connect the cables to the BCM50

For information about installing an expansion unit:

- Unpacking the expansion unit on page 93
- Verifying the media bay module switch settings on page 93
- Installing a media bay module in an expansion unit on page 97
- Installing the expansion unit on page 98

Unpacking the expansion unit

Open the expansion unit box and remove all the components. Check that the box contains the following components:

- one expansion unit
- one expansion unit power supply
- one power supply cable
- one expansion cable (shielded Ethernet cable)
- one power supply retention clip
- four rubber feet

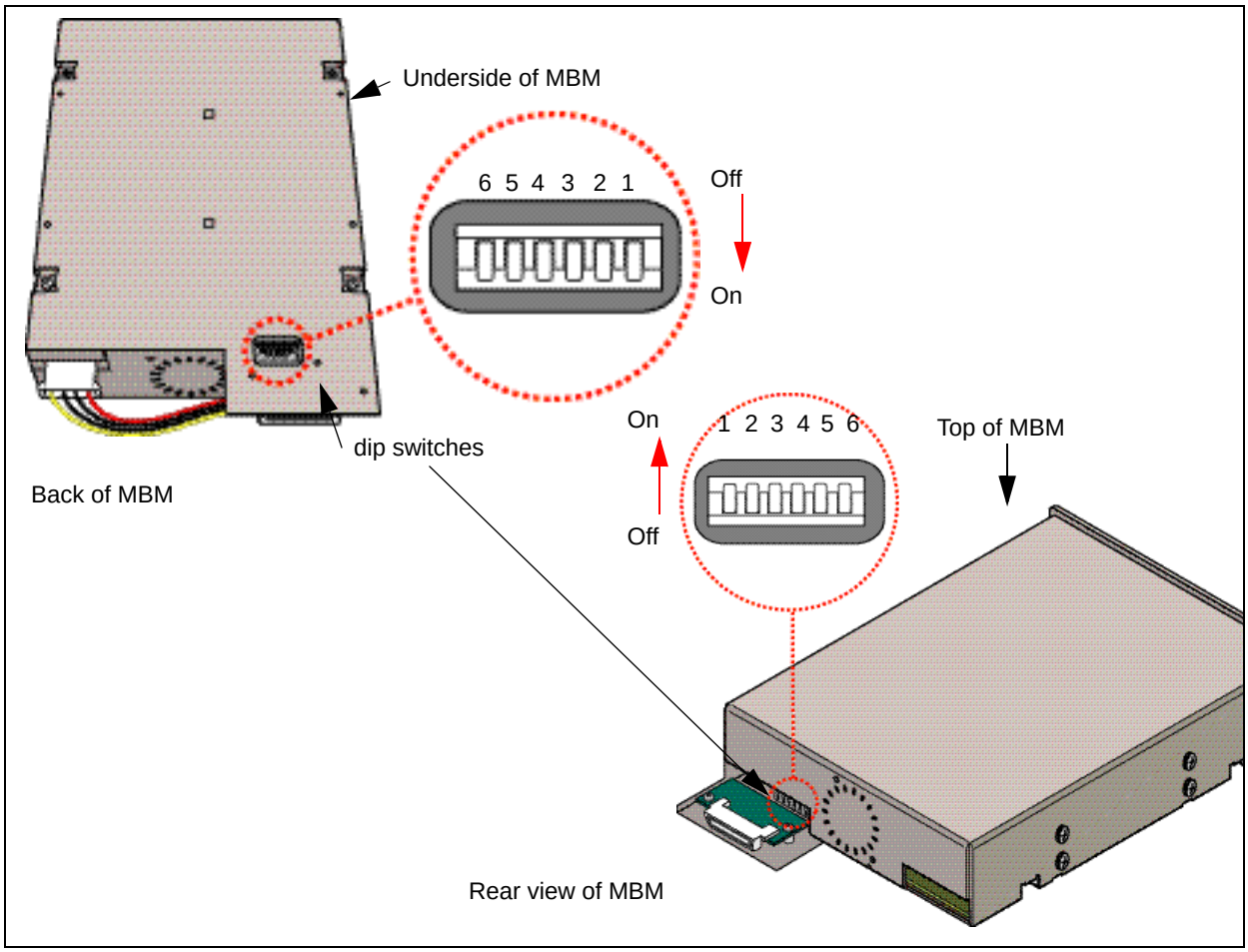
Visually inspect the components for damage during shipping. If you find damage, contact your Avaya representative.

Warning: Make sure the power supply to the expansion unit is disconnected before inserting or removing an MBM.

Verifying the media bay module switch settings

Each MBM has dip switches on the back or underside of the module. See the figure Switches on the media bay module (not applicable for GASM or GATM) on page 94.

Figure 46 Switches on the media bay module (not applicable for GASM or GATM)



Note: The GASM and GATM MBMs have a dip switch configuration different from that shown in the figure Switches on the media bay module (not applicable for GASM or GATM) on page 94. For more information, see the procedure To set GASM dip switches on page 95 and the procedure To set GATM dip switches on page 96.

Verify that the dip switches for your MBMs are in the default factory positions.

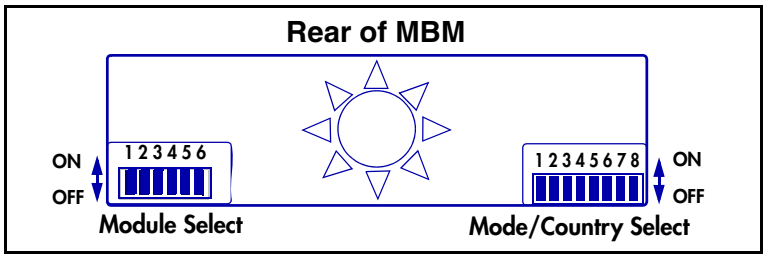
If you install a DTM, ADID4, ADID8, BRIM, 4x16, DSM16, DSM32, or ASM8, ensure that all the switches are on, which is the default setting for the MBM switches. After you set the switches, proceed to Installing a media bay module in an expansion unit on page 97.

To set G4x16 or G8x16 dip switches

1 Set the Module Select dip switches to on (up). See the figure G4x16/G8x16 dip switch location on page 95.

2 Set the Mode/Country Select dip switches to off (down); this setting allows the MBM to automatically download the country profile settings.

Figure 47 G4x16/G8x16 dip switch location



For information about line and DN settings, see the table G4x16/G8x16 lines and DNs settings on page 95.

Table 16 G4x16/G8x16 lines and DNs settings

Expansion unit	Module	Card	Lines	DNs
1	05	01	065-068 (G4X16) 065-072 (G8x16)	253-268
2	07	01	095-098 (G4X16) 095-102 (G8X16)	285-300

To set GASM dip switches

1 For the dip switches on the left side at the rear of the module, set all switches to on.

2 For the dip switches on the right side at the rear of the module, set the switches according to the table GASM dip switch settings (switch 1–3) on page 95 and the table GASM dip switch settings (switch 4–8) on page 96.

Table 17 GASM dip switch settings (switch 1–3)

Switch	Description	Setting
Switch 1	Firmware download capability	OFF—Standard mode (firmware downloading not supported) ON—Enhanced mode (firmware downloading supported)
Switch 2	Set when the firmware is downloaded from the BCM50 (for enhanced mode only)	OFF—if you want the GASM to download the firmware when the firmware version in the BCM50 is different from the version in the GASM (default) ON—if you want the GASM to download the firmware whenever a cold start is performed for the BCM50
Switch 3	Enable or disable echo cancellation	OFF—Enables echo cancellation (default) ON—Disables echo cancellation

Table 18 GASM dip switch settings (switch 4–8)

Switches 4 to 8 select the region for the GASM as follows:					
	Switch 4	**Switch 5**	**Switch 6**	**Switch 7**	**Switch 8**
North America	OFF	OFF	OFF	OFF	OFF
United Kingdom	OFF	OFF	OFF	OFF	ON
Australia	OFF	OFF	OFF	ON	OFF
Poland	OFF	OFF	OFF	ON	ON

3 After you set the switches, proceed to Installing a media bay module in an expansion unit on page 97.

To set GATM dip switches

1 For the dip switches on the left side at the rear of the module, set all switches to on.

2 For the dip switches on the right side at the rear of the module (country profile switches), set all switches to off. The GATM downloads the country profiles automatically.

3 After you set the switches, proceed to Installing a media bay module in an expansion unit on page 97.

Installing a media bay module in an expansion unit

Warning: Risk of shock.
Only qualified telecommunications service personnel are permitted to service this equipment.
Ensure the Avaya BCM system is unplugged from the power socket and that any telephone or network cables are unplugged before opening.

The MBMs have been safety-approved for installation into the Avaya BCM system. It is the responsibility of the installer and user to ensure that installation of the hardware does not compromise existing safety approvals or local electrical code regulations for telecommunications equipment and wiring installation.

Do not connect the digital station ports of the DSM16+, DSM32+, or Combination MBMs to the PSTN. Only approved digital phone sets or peripheral devices can connect to the DSM16+, DSM32+, and Combination MBMs.

Warning:
Digital Station ports DSM16+, DSM32+, and Analog Station ports GASM8 must not be connected to exposed plant. This includes Digital Station ports residing on the Combination MBMs G4x16 and G8x16. Use only proprietary Avaya Digital Station Sets for connection to digital ports and agency approved Analog devices for connection to the Analog Station ports.

The digital station ports of the Combination MBMs must not be connected to exposed plant

Follow this procedure to install a media bay module (MBM).

To install an MBM

1. Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
2. With the face of the MBM toward you, insert the MBM into the expansion unit.
3. Push the MBM completely into the expansion unit. You hear a click when the MBM is firmly seated in the expansion unit.

   The MBM must be configured for it to function. For information about configuring an MBM, see the procedure To configure the MBM(s) on page 153.
4. Proceed with Installing the expansion unit on page 98.

Installing the expansion unit

Make sure that the expansion unit is installed close enough to the main unit so that the supplied expansion cable can be connected between the expansion unit and main unit.

The expansion unit can be mounted in a rack, on a wall, or on a desktop. Typically, the expansion unit is mounted in the same way as the main unit.

Use one of the following procedures to mount the expansion unit:

- Installing the Avaya BCM50 unit in an equipment rack on page 78
- Installing the Avaya BCM50 unit on the wall on page 82
- Installing the Avaya BCM50 unit on a desktop or shelf on page 87

Next step

If you install a second expansion unit on the system, repeat the procedures in this section for the second expansion unit.

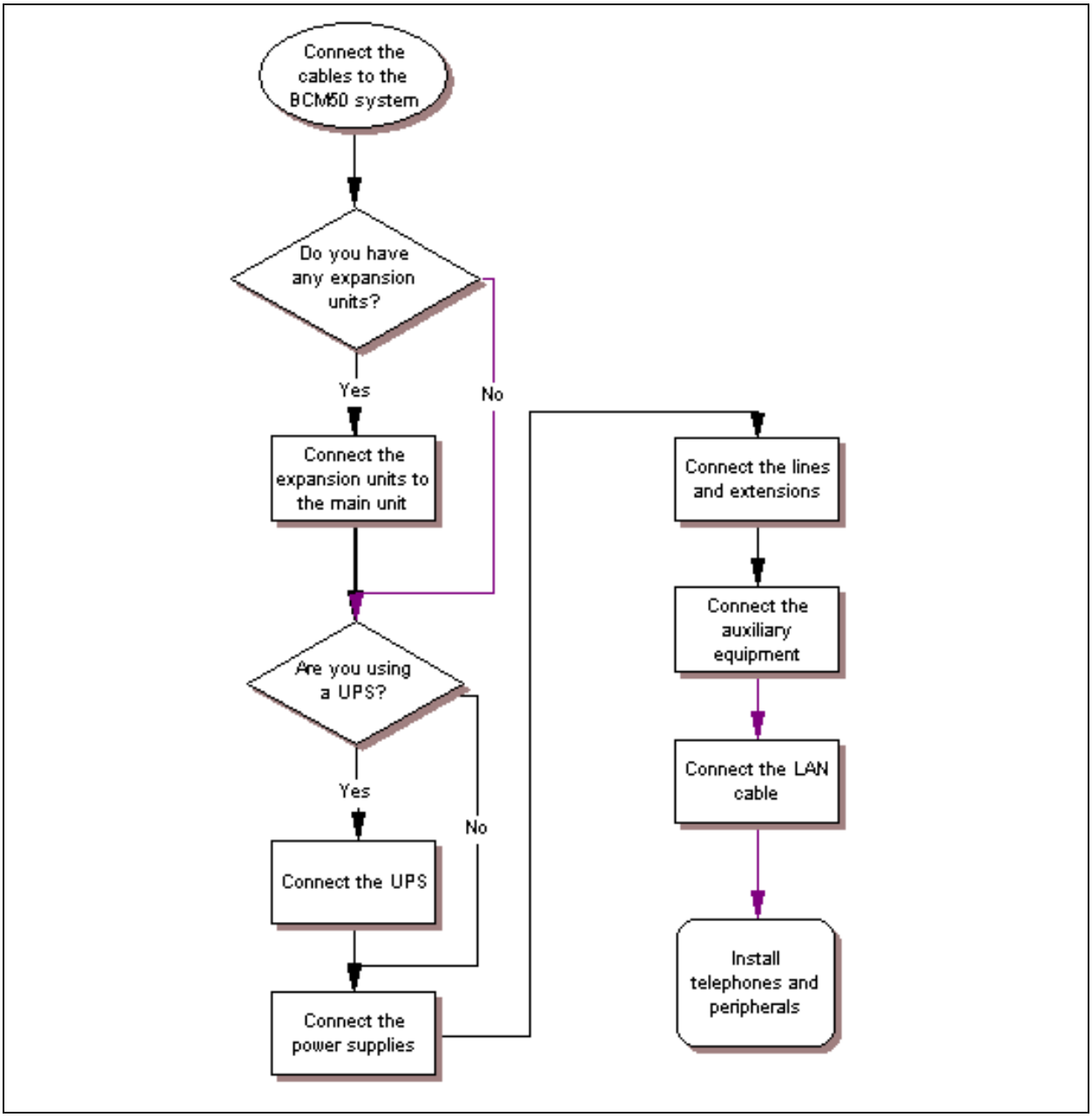
After you install the expansion unit, proceed to Connecting the cables to the Avaya BCM50 system on page 99.

Chapter 9
Connecting the cables to the Avaya BCM50 system

This section describes how to connect the telephone lines, telephony devices, and power to the Avaya Business Communications Manager (Avaya BCM50) system.

The figure Overview of connecting cables to the BCM50 system on page 99 shows the steps required to connect the cables to the Avaya BCM50 system.

Figure 48 Overview of connecting cables to the BCM50 system



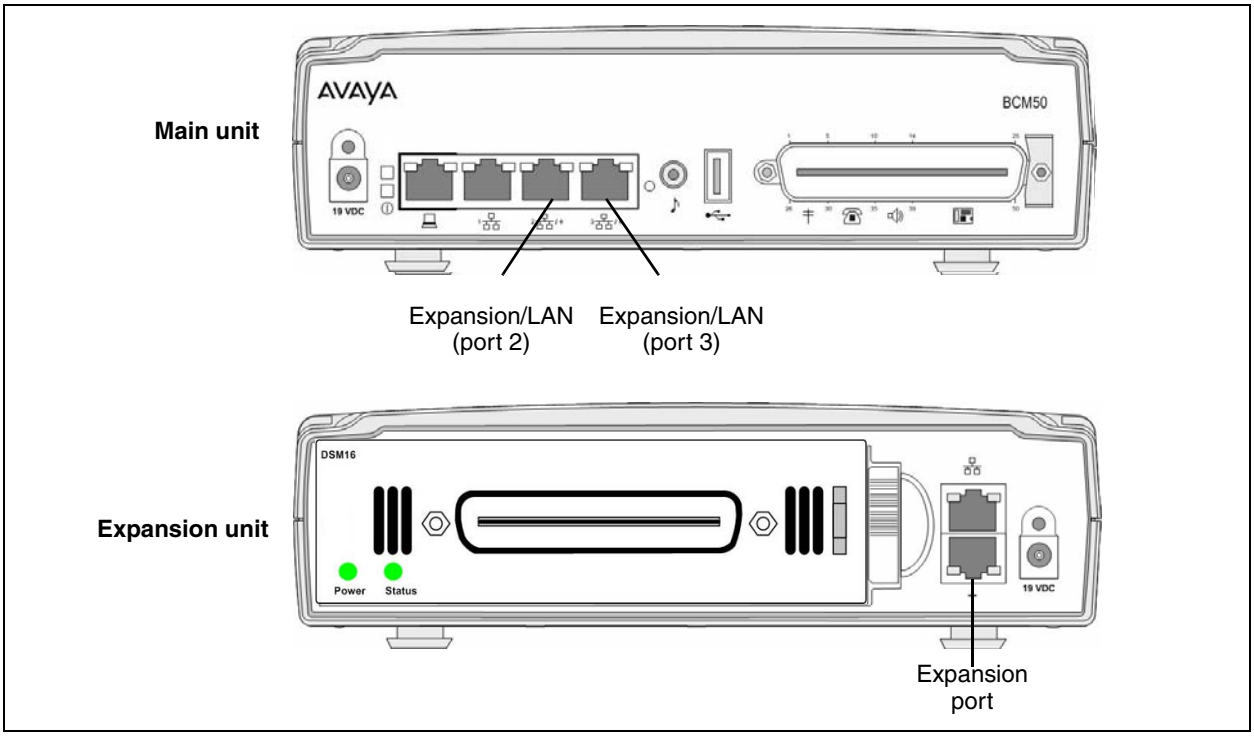
For information about connecting the cables to the Avaya BCM50 system:

- Connecting the expansion unit on page 100
- Connecting the power supply on page 102
- Connecting the lines and extensions on page 104
- Connecting the auxiliary equipment on page 109

Connecting the expansion unit

The expansion unit connects to the main unit through the expansion ports on the front of the units. The figure Expansion ports on page 100 shows the location of the expansion ports on the Avaya BCM50 main unit and the expansion unit.

Figure 49 Expansion ports



Note: The expansion unit connected to expansion/LAN port 2 on the main unit is designated as Expansion 1 in Business Element Manager, while the expansion unit connected to expansion/LAN port 3 is designated as Expansion 2.

Use this information to configure the correct media bay module (MBM) in Business Element Manager (see Configuring the media bay module on page 153).

If your Avaya BCM50 system does not have an expansion unit, proceed to Connecting the power supply on page 102.

To connect an expansion unit

Note: Keycodes are required for the expansion ports to function. If you purchase a keycode for one expansion port only, expansion/LAN port 2 (on the left) is active.

1 Locate the expansion cable supplied with the expansion unit.
If have no expansion cable, you can use a shielded category 5e-compliant Ethernet cable (maximum length of 10 m).

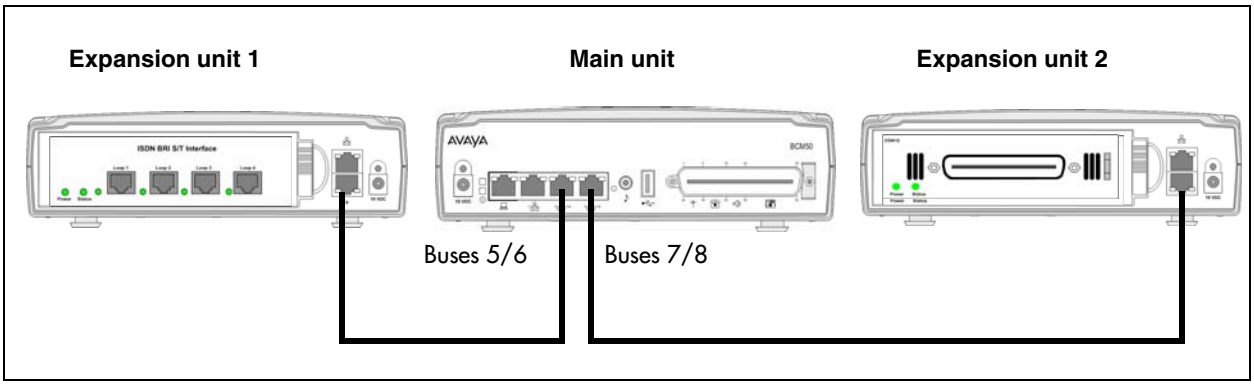
2 Plug one end of the expansion cable into the expansion port on the expansion unit.

3 Perform one of the following tasks (see the figure Connecting the expansion unit to the BCM50 main unit on page 101):

- **To connect the first expansion unit**: Plug the other end of the expansion cable into expansion/LAN port 2 on the main unit. This expansion unit is now designated as Expansion 1 in Element Manager.
- **To connect the second expansion unit**: Plug the other end of the expansion cable into expansion/LAN port 3 on the main unit. This expansion unit is now designated as Expansion 2 in Element Manager.

Note: When you plug an expansion unit into the correct port on the main unit, the LEDs on the expansion unit port light, while the LEDs on the main unit port turn off.

Figure 50 Connecting the expansion unit to the BCM50 main unit



The expansion port you select determines the line and extension numbers of the devices connected to the expansion unit. For the default line and extension numbers, see the table Default line and extension numbers on page 102. If you have a second expansion unit, repeat steps 1 to 3 for the second unit.

Table 19 Default line and extension numbers

	Default extension numbers*	**Default line numbers***
Main unit	Digital: 221–232 Analog: 233–236	061–064
Expansion port 1	237–268	065–094
Expansion port 2	269–300	095–124
* The number and type of lines and extensions that are available on the expansion ports are determined by the MBM you install in the expansion unit.		

Connecting the power supply

An uninterruptible power supply (UPS) is an optional device that you connect to your Avaya BCM50 system. The UPS provides battery backup for the BCM50 system to maintain continuous operation during a power interruption or failure. For more information about the UPS, see Uninterruptable power supply on page 50.

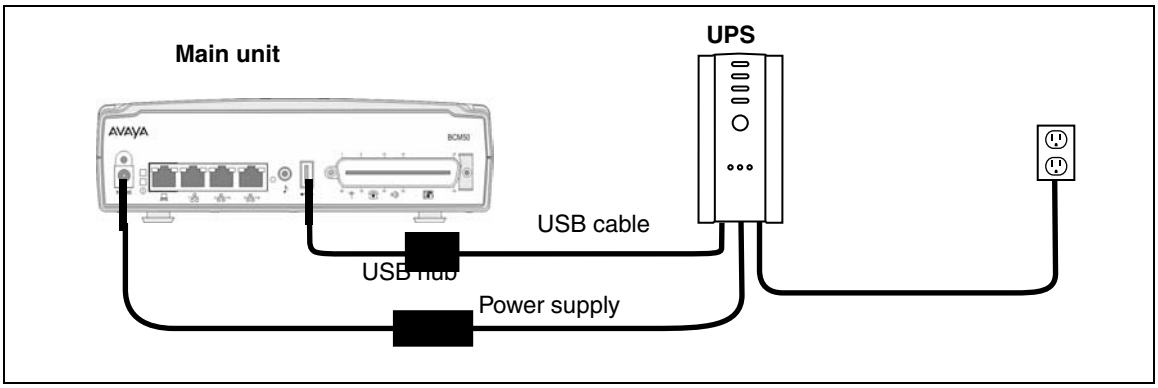
When connecting a UPS, you must use a USB hub between the UPS and the BCM50 system.

Note: For the UPS to function correctly, you must first connect it before you power up the BCM50 system. If you connect a UPS to a running system, the UPS does not function.

Note: International (non-North American) users require the power supply adapter cord to connect the power supply to the special power bar. For more information, see Power supply adapter cord (international users) on page 50.

The figure Connect a UPS on page 103 shows how to connect the UPS.

Figure 51 Connect a UPS



If your BCM50 system does not have a UPS, continue with the procedure To connect a power supply without a UPS on page 103.

To connect a power supply using a UPS

1 Mount the UPS within 1.5 meters (5 ft.) of the Avaya BCM50 units.
The UPS must be close enough to the BCM50 units that you can connect the power supply to both the UPS and the BCM50 units.

2 Plug one end of the USB cable into the USB port on the UPS.
For information about the location of the ports on the UPS, see the UPS documentation.

3 Plug the other end of the USB cable into the USB hub.

4 Plug one end of the second USB cable into the USB hub.

5 Plug the other end of the second USB cable into the USB port on the main unit.

6 Plug the UPS power cord into the AC power source (wall outlet).

7 Proceed to Connecting the lines and extensions on page 104.

To connect a power supply without a UPS

1 Unpack the new power supply.

2 Check the power supply for damage. If you find damage, contact your Avaya representative.

Warning: Do not use the power supply if the power supply cord or power supply cable is damaged.

3 Rotate the retention clip so the power outlet is open.

4 Plug the power supply cord into the Avaya BCM50 unit.

Note: Use only the power supply that is approved by Avaya for use with the BCM50 units.

5 Rotate the retention clip so that it locks the power supply cord in place.

6 Plug one end of the power supply cable into the power supply.

7 Plug the other end of the power supply cable into the AC power source (wall outlet).

8 Repeat steps 1 to 6 for each BCM50 unit.

Warning: Leakage currents

You must reconnect the power cords to a grounded outlet before reconnecting the telephony and data networking cables.

9 Proceed to Connecting the lines and extensions on page 104.

Connecting the lines and extensions

The telephone lines and extensions connect to the Avaya BCM50 system through an RJ-21 telephony connector on the front of the main unit and to the connectors on the MBM installed in the expansion units.

You can also use the optional wiring field card (WFC) to simplify the connection of the lines and extensions to the RJ-21 telephony connector in a wall-mount or desktop-mount installation. For rack-mount installations you can use the optional rack-mount patch panel.

For information about connecting lines and extensions:

- Wiring warnings on page 105
- Connecting lines and extensions to the RJ-21 telephony connector on page 106
- Connecting telephone lines to the expansion units on page 107
- Connecting extensions to the expansion units on page 108
- To connect the cables to the wiring field card (optional) on page 113

Wiring warnings

Read the following warnings before you connect any telephone lines or extensions to the Avaya BCM50 system.

Warning: Electrical shock warning
The MBMs are safety approved for installation into the expansion unit. The installer and user must ensure that installation of the hardware does not compromise existing safety approvals.

BEFORE YOU OPEN the main unit or expansion unit, ensure that the network telecommunication cables are unplugged and the unit is disconnected from the AC power source.

Station modules: Connect the ports on these modules only to approved digital telephones and peripherals with the proper cables on a protected internal wiring system.

Do not connect telephones to wiring that extends to the outside of the building.

Read and follow the installation instructions carefully.

Warning: Use only qualified persons to service the system.
Service personnel with the appropriate training and experience must perform the installation and service of this unit. Service personnel must be aware of the hazards of working with telephony equipment and wiring. They must have experience in techniques that minimize any danger of shock or equipment damage.

Warning: Leakage currents
Service personnel must be alert to the possibility of high leakage currents becoming available on metal system surfaces during power-line fault events on network lines. These leakage currents normally flow safely to protective earth ground through the power cord. However, if the AC power is unplugged prior to disconnecting the cables from the Avaya BCM50 units, this hazard can occur.

System shutdown: You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

System startup: You must reconnect the power cords to a grounded outlet before reconnecting the telephony and data networking cables.

Danger: Electrical shock hazards

Electrical shock hazards from the telecommunications network and AC mains are possible with this equipment. To minimize risk to service personnel and users, you must connect the Avaya BCM50 system to an outlet with a third-wire ground. In addition, all unused slots must have blank faceplates installed. The covers on all units must be in place after servicing.

Connecting lines and extensions to the RJ-21 telephony connector

You can connect 4 analog lines, 4 analog extensions, and 12 digital extensions to the RJ-21 telephony connector.

If you use the WFC to connect the lines and extensions to the RJ-21 telephony connector, see Installing the wiring field card (optional) on page 86 and the procedure To connect the cables to the wiring field card (optional) on page 113.

Warning: If you use the same phone line for both an analog trunk and a DSL line, you must install a DSL filter on the analog trunk to avoid interference with the DSL modem.

To connect the lines and extensions

1. Read the warnings in Wiring warnings on page 105.
2. Obtain a 25-pair cable with an RJ-21 connector on one end.
3. Remove the appropriate side breakout from the cable-management door:
   - If this is the first unit on an Avaya BCM50 system with multiple units, remove the side breakout from the right side of the cable-management door.
   - If this is the center unit on a BCM50 system with more than two units, remove the side breakout from both sides of the cable-management door.
4. Plug the RJ-21 connector into the RJ-21 telephony connector on the main unit.
5. Select the appropriate option to secure the RJ-21 connector to the main unit:
   - If you use a straight RJ-21 connector, use the two supplied screws on the sides of the connector to secure it.
   - If you use a right-angle RJ-21 connector, use the supplied screw on the left side of the connector to secure the left side of the connector. To secure the right side of the connector, use the supplied cable tie to fasten the 25-pair cable to the anchor on the main unit.
6. Connect the four pairs of wires for the analog lines to the telephone company demarcation blocks of the building.
7. Connect the four pairs of wires for the analog telephones to the local connecting blocks.
8. Connect the 12 pairs of wires for the digital telephones to the local connecting blocks.

9 Select the appropriate option for your system:

- If your BCM50 system has an expansion unit, proceed to Connecting telephone lines to the expansion units on page 107 or Connecting extensions to the expansion units on page 108.
- If your BCM50 system has no expansion unit, proceed to Connecting the auxiliary equipment on page 109.

For detailed information about wiring the RJ-21 telephony connector, see RJ-21 telephony connector wiring chart on page 215.

Connecting telephone lines to the expansion units

Telephone lines connect to the expansion unit through the connectors on the MBM installed in the expansion unit.

To connect telephone lines to DTM, BRIM, or 4x16 MBMs

1 Read the warnings in Wiring warnings on page 105.

2 Obtain a telephone cable that has a modular plug that matches the MBM to which you are connecting:

- RJ-48C—for DTM
- RJ-45—for BRIM
- RJ-11—for 4x16

3 Plug the modular cable into the jack in the front of the MBM.

4 Connect the other end of the cable to the telephone company demarcation blocks of the building.

5 If you connect telephone lines to a 4x16 or BRIM, repeat steps 2 to 4 for each line.



Warning: If the network ISDN is a U-loop, you must connect the BRIM only to an NT1 provided by the service provider. The NT1 must provide a Telecommunication Network Voltage (TNV) to Safety Extra Low Voltage (SELV) barrier.



Note: Do not attempt to plug digital equipment into the auxiliary (AUX) jacks on the front of 4x16 MBM.

6 Select the appropriate option for your system:

- If you connect a 4x16 MBM, go to Connecting extensions to the expansion units on page 108 for instruction about wiring the extensions for this MBM.
- If your Avaya BCM50 system has another expansion unit, repeat this procedure if you add more telephone lines, or proceed to Connecting extensions to the expansion units on page 108 if you add extensions.

- If your BCM50 system has no other expansion unit, proceed to Connecting the auxiliary equipment on page 109.

To connect analog telephone lines to the GATM4/GATM8 or G4x16/G8x16

1. Read the warnings in Wiring warnings on page 105.
2. Obtain a 25-pair cable with an RJ-21 connector on one end.
3. Plug the RJ-21 connector of the cable into the RJ-21 connector on the front of the MBM.

   Use the lower RJ-21 connector on the G4x16/G8x16 MBMs to connect analog lines.
4. Select the appropriate option to secure the RJ-21 connector to the MBM:
   - If you use a straight RJ-21 connector, use the two supplied screws on the sides of the connector to secure it.
   - If you use a right-angle RJ-21 connector, use the supplied screw on the left side of the connector to secure the left side of the connector. To secure the right side of the connector, use the supplied cable tie to fasten the 25-pair cable to the anchor on the MBM.
5. Connect the other end of the cable to the telephone company demarcation blocks of the building.
6. Select the appropriate option for your system:
   - If your BCM50 system has another expansion unit, repeat this procedure if you add more telephone lines, or proceed to Connecting extensions to the expansion units on page 108 if you add extensions.
   - If your BCM50 system has no other expansion unit, proceed to Connecting the auxiliary equipment on page 109.

For information about wiring the trunk MBMs:

- DTM wiring chart on page 227
- BRIM wiring chart on page 229
- GATM wiring chart on page 233
- 4x16 wiring charts on page 237
- G4x16 and G8x16 wiring charts on page 241

Connecting extensions to the expansion units

Extensions connect to the expansion unit through the connectors on the MBM installed in the expansion unit.

To connect extensions to DSM16, DSM32, ASM8, 4x16, G4x16, or G8x16 MBMs

1. Read the warnings in the Wiring warnings on page 105 section.
2. Obtain a 25-pair cable with an RJ-21 connector on one end.
3. Plug the RJ-21 connector of the cable into the RJ-21 connector on the front of the MBM.

   Use the upper RJ-21 connector on the G4x16/G8x16 MBMs to connect digital extensions.
4. Select the appropriate option to secure the RJ-21 connector to the MBM:
   - If you use a straight RJ-21 connector, use the two supplied screws on the sides of the connector to secure it.
   - If you use a right-angle RJ-21 connector, use the supplied screw on the left side of the connector to secure the left side of the connector. To secure the right side of the connector, use the supplied cable tie to fasten the 25-pair cable to the anchor on the MBM.
5. Connect the other end of the cable to the local connecting blocks.
6. If you connect extensions to a DSM32, repeat steps 2 to 5 for the second RJ-21 connector.
7. Select the appropriate option for your system:
   - If your BCM50 system has another expansion unit, repeat this procedure if you add more extensions, or proceed to Connecting telephone lines to the expansion units on page 107 if you add telephone lines.
   - If your BCM50 system has no other expansion unit, proceed to Connecting the auxiliary equipment on page 109.

For information about wiring the station MBMs:

- 4x16 wiring charts on page 237
- G4x16 and G8x16 wiring charts on page 241
- DSM16 and DSM32 wiring charts on page 245
- ASM8, ASM8+, and GASM wiring chart on page 249

Connecting the auxiliary equipment

The main unit has connections for an auxiliary ringer, an external paging system, and a music source.

You can connect this auxiliary equipment through the auxiliary terminal block on the wiring field card (WFC) or the patch panel. See the procedure To connect the cables to the wiring field card (optional) on page 113 or the procedure To connect the cables to the patch panel (optional) on page 113.

For information about connecting auxiliary equipment:

- Connecting an auxiliary ringer on page 110
- Connecting an external paging system on page 110
- Connecting an external music source on page 111

Connecting an auxiliary ringer

An auxiliary ringer is a customer-supplied piece of hardware that provides external ringing capability to telephones on the Avaya BCM50 system.

To install an auxiliary ringer

1. Use the installation instructions supplied with the ringer hardware to install the auxiliary ringer.
2. Connect the ringer generator to the auxiliary ringer output pair on the RJ-21 telephony connector. To determine which pair of wires to use for the auxiliary ringer, see RJ-21 telephony connector wiring chart on page 215.

Warning: You must not connect auxiliary ringer to unprotected plant wiring. The ringer must not draw more than 50 mA from a 40 V DC source.

3. Select the appropriate option for your system:
   - If you add more auxiliary equipment, proceed to Connecting an external paging system on page 110 or Connecting an external music source on page 111.
   - When you finish adding auxiliary equipment, proceed to Next step on page 114.

Connecting an external paging system

You can connect a customer-supplied external paging system to provide paging over external loudspeakers.

Ensure the paging system follows these guidelines:

- The paging output from the main unit is 100 mV rms across an input impedance of 600 Ω.
- The output level is 0 dBm0 with reference to 600 ohms for a PCM encoded signal at 0 dBm. There is no DC voltage across the page output terminals.

When you use the page signal output to connect an external paging amplifier, you also use the page relay output that contains a floating relay contact pair. The system uses this output to control the external paging amplifier.

- The contact pair for the page relay output has a switch capacity of 50 mA (non inductive) at 40 V (maximum).

To install an external paging system

1. Use the installation instructions supplied with the external paging hardware to install the external paging system.
2. Connect the paging system audio input to the page output on the RJ-21 telephony connector. To determine which pair of wires to use for the page output, see RJ-21 telephony connector wiring chart on page 215.

3 Connect the paging system relay to the page relay output on the RJ-21 telephony connector. To determine which pair of wires to use for the page relay output, see RJ-21 telephony connector wiring chart on page 215.

Warning: You must connect the paging connections to unprotected telephony plant wiring.

Tip: Paging tips

External paging does not support talk back paging equipment unless you use an external line port.

The Avaya BCM50 system provides paging over the telephone speakers when no external paging equipment is available.

4 Select the appropriate option for your system:

- If you add more auxiliary equipment, proceed to Connecting an external music source on page 111 or Connecting an auxiliary ringer on page 110.
- When you finish adding auxiliary equipment, proceed to Next step on page 114.

Connecting an external music source

Use this procedure to connect an external music source to the Avaya BCM50 system. You can use any customer-supplied, approved, low-power device as a music source. A music source includes equipment such as a radio with a high-impedance earphone jack.

For information about connecting an external music source:

- Music source specifications on page 111
- To connect the music source using the music source jack on page 112
- To connect the music source using the RJ-21 telephony connector on page 112

Music source specifications

Ensure that the music source follows these guidelines:

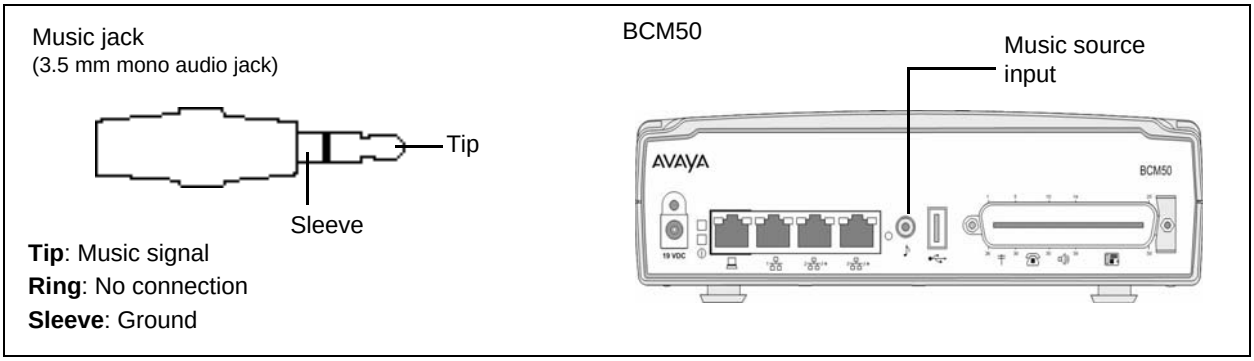
- Nominal input impedance is 3.3 kilohms.
- Nominal sensitivity of this interface returned to digital encoded PCM is –22 dBm0 for a 0.25 V rms input signal.
- The input is limited so that the encoded analog content at the digital interface to the network does not exceed –12 dBm when averaged over any three-second interval.
- The maximum non clipped input level is 1 V rms.
- The interface is protected against ringing cross.

The music source jack is on the front of the main unit. If you use the music source jack to connect the music source, do not connect a music source to the music source pair on the RJ-21 telephony connector.

To connect the music source using the music source jack

1 Connect the miniature jack of the music source output (3.5 mm mono audio jack) to the music source input on the Avaya BCM50 main unit. See the figure Music source jack on page 112.

Figure 52 Music source jack



2 Adjust the volume of the music source to an appropriate level by placing a call and putting it on hold, and then adjust the volume at the music source.

Tip: You can adjust the background music volume at every telephone.

3 Select the appropriate option for your system:

- If you add more auxiliary equipment, see Connecting an external paging system on page 110 or Connecting an auxiliary ringer on page 110.
- When you finish adding auxiliary equipment, proceed to Next step on page 114.

To connect the music source using the RJ-21 telephony connector

Note: If you use the RJ-21 telephony connector to connect the music source, do not connect a music source to the music source jack on the front of the main unit.

1 Connect the music source output to the music source input on the RJ-21 telephony connector. To determine which pair of wires to use for the music source input, see RJ-21 telephony connector wiring chart on page 215.

2 Adjust the volume of the music source to an appropriate level by placing a call and putting it on hold, and then adjust the volume at the music source.

Tip: You can adjust the background music volume at every telephone.

3 Select the appropriate option for your system:

- If you add more auxiliary equipment, proceed to Connecting an external paging system on page 110 or Connecting an auxiliary ringer on page 110.
- When you finish adding auxiliary equipment, proceed to Next step on page 114.

To connect the cables to the wiring field card (optional)

1 Plug the RJ-21 end of the cable assembly into the RJ-21 telephony connector.

The cable is now permanently connected to the RJ-21 telephony connector.

2 Remove the terminal block from the WFC:

a Slide a small flat screwdriver into the rectangular opening at the back of the terminal block.

b Pry the terminal block so the top rotates forward and the block comes free.

Make the connections to the terminal block while it is removed from the header.

3 Use a small slotted screwdriver to unscrew the wire hole screws on top of the terminal block.

4 Insert the bare wire ends (6 mm or 0.25 in.) in the appropriate holes on the sides of the terminal block.

5 Tighten the screws to hold the wires in place.

6 Reinstall the terminal block on the header of the WFC.

7 Connect the remaining wires (digital telephones, analog telephones, and analog trunks) to the WFC.

The eight-pin modular jacks on the WFC accept RJ-45 or RJ-11 modular plugs.

8 Connect cables to the main unit as required.

To connect the cables to the patch panel (optional)

1 Plug the RJ-21 end of the cable assembly into the RJ-21 telephony connector.

2 Plug the other end of the cable assembly into the patch panel header.

The cable locks in place.

3 Remove the terminal block from the patch panel:

a Slide a small flat screwdriver into the rectangular opening at the back of the terminal block.

b Pry the terminal block so the top rotates forward and the block comes free.

Make the connections to the terminal block while it is removed from the header.

4. Use a small slotted screwdriver to unscrew the wire hole screws on top of the terminal block.
5. Insert the bare wire ends (6 mm or 0.25 in.) in the appropriate holes on the sides of the terminal block.
6. Tighten the screws to hold the wires in place.
7. Reinstall the terminal block on the patch panel.
8. Connect the wires (digital telephones, analog telephones, and analog trunks) to the patch panel.
9. Connect cables to the main unit as required.

Next step

After you connect the cables to the Avaya BCM50 system, you can configure the initial parameters. For information about configuring these parameters, see Installing telephones and peripherals on page 115.

Chapter 10
Installing telephones and peripherals

This section describes how to install telephones and peripherals.

You can add telephones and peripherals before or after you initialize your system. Which station media bay module (MBM) you use determines your telephone configuration.

When you initialize the Avaya Business Communications Manager 50 (Avaya BCM50), it creates default settings for telephone DN records. The settings are based on which telephony profile you chose. To change these settings, use the Business Element Manager application. Specific instructions for configuring telephone operation through Business Element Manager are in the *Avaya Business Communications Manager 6.0 Configuration—Devices*.

Note: For detailed information about installing various telephones and peripherals, see the documentation for your particular telephone or peripheral.

Note: Programming occurs on the telephone when the Avaya BCM50 system recognizes the telephone on the system.

For information about installing telephones and peripherals:

- System telephones on page 115
- Installing an emergency telephone on page 116
- Installing IP Deskphones on page 116

System telephones

The Avaya BCM50 system supports a number of analog, digital, IP telephony, and cordless telephones. For more information on supported telephones, see the *Avaya Business Communications Manager 6.0 Configuration—Telephony*.

Analog telephones are supported either through the analog station ports on the main unit, analog station MBMs (ASM), or by connecting to a digital module through an analog terminal adapter 2 (ATA2).

Each piece of equipment has documentation describing installation and telephone features.

Analog terminal adapter 2

The analog terminal adapter 2 (ATA2) connects a standard analog voice device or data communication device to a digital station connector on the Avaya BCM50 system.

For the requirements and procedure to install the device, see Installing the analog terminal adapter on page 117.

Installing an emergency telephone

You can use the emergency telephone to make calls when no power is available to the Avaya BCM50 system.

Emergency telephone will work if it is connected to CSC 1.0 hardware, however it will not work with later hardware versions.

Emergency telephone will work only if it is connected to expansion unit with a caller ID trunk module (CTM) or a global analog trunk module (GATM) on the CSC 1.0 (Indicated by telegraph pole label) and providing first line and first analog set.

To install an emergency telephone on the BCM50 system, connect a single-line analog telephone to the auxiliary port on the CTM/GATM. When you make a call from the emergency telephone, the auxiliary port uses the telephone line connected to the line 1 port of the CTM or GATM.

You can connect an emergency telephone to every CTM installed on your BCM50 system.

To install the emergency telephone

1. Connect a single-line analog telephone to the auxiliary port on the CTM or GATM.
2. Connect an analog PSTN line cable to the line 1 port of the CTM or GATM.
3. On the main unit (if CSC 1.0):
   - Connect a single-line analog telephone to the first analog station port on the main unit (pins 30 + 5 / i.e. White-Slate & Slate-White)
   - Connect an analog PSTN line cable to the first line port on the main unit (pins 26 + 1 / i.e. white-blue & blue-white).

Installing IP Deskphones

You can set the system to automatically assign DNs to the IP Deskphones. The autoassign feature assigns DNs in the configured IP DN range.

If you choose to manually assign DNs, choose DNs in the assigned DN range. Ensure that the DN type in each DN record is set to IP telephony.

For details about configuring DN records for the IP Deskphones, see the Avaya *Business Communications Manager 6.0 Configuration—Telephony.*

Chapter 11
Installing the analog terminal adapter

This section provides installation instructions for the analog terminal adapter 2 (ATA2) or ATA.

The ATA2 connects a standard analog voice device or data communication device to the Avaya Business Communications Manager (Avaya BCM50) system through a digital station module. Examples of analog voice devices are analog telephones and answering machines. Examples of analog data communication devices are modems and fax machines.

The ATA2 is designated as either an ONS (on-premise station) or an OPS (off-premise station) port.

For information about installing an ATA2:

- Configuration overview on page 117
- Installing the ATA2 on page 118
- Configuring the ATA2 on page 121

For ATA2 specifications, see the table ATA2, ASM8, ASM8+, GASM, and GASI analog device specifications on page 45.

Configuration overview

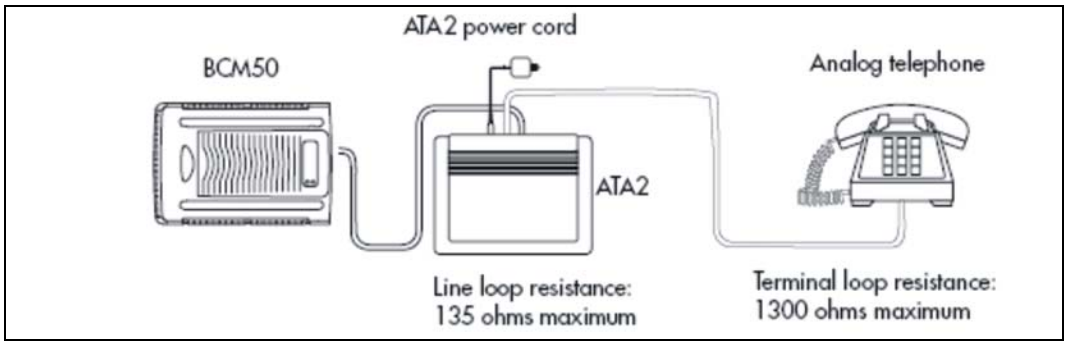
This section describes environment configurations for connecting analog and data devices to the main unit using an ATA2:

- Analog telephone on page 117
- Analog data device on page 118

Analog telephone

The figure Analog telephone installation overview on page 117 shows an installation overview for connecting an analog device through an ATA2 to the main unit.

Figure 53 Analog telephone installation overview

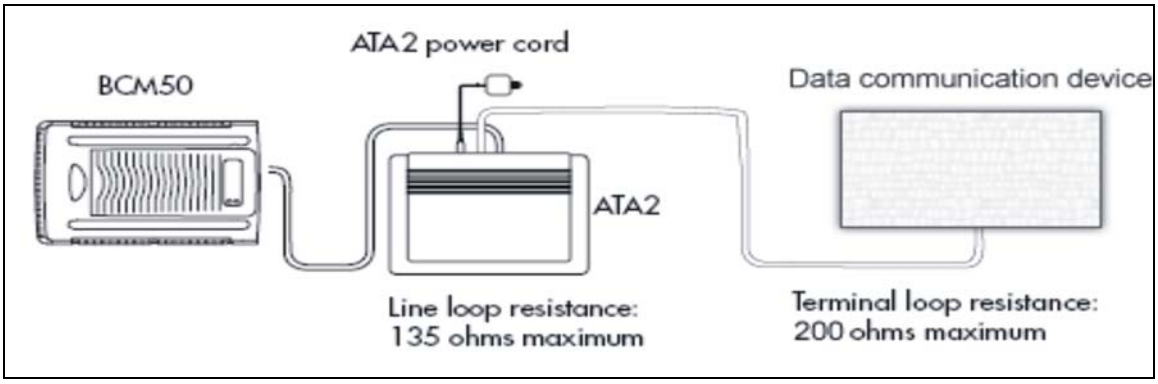


Analog data device

The ATA2 connects a standard analog data device, such as a fax or modem, to the Avaya BCM50 system.

The figure Data communication device installation overview on page 118 shows an installation overview for connecting a data communication device through an ATA2 to the BCM50 system.

Figure 54 Data communication device installation overview



Installing the ATA2

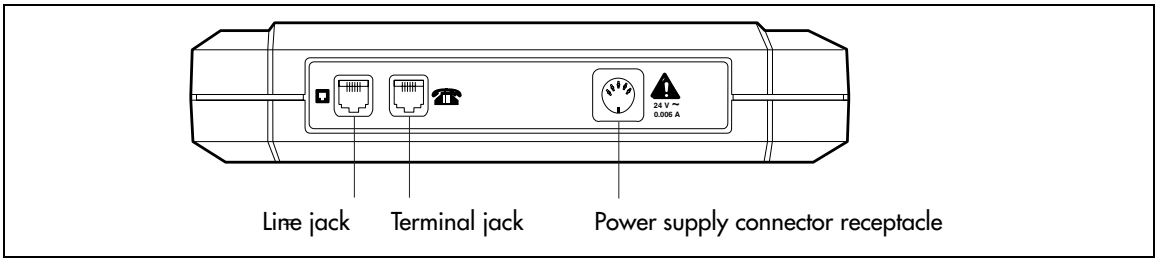
This section provides information about installing the ATA2:

- Connecting the ATA2 on page 118
- Mounting the ATA2 on page 119
- Test insertion loss measurement on page 120

Connecting the ATA2

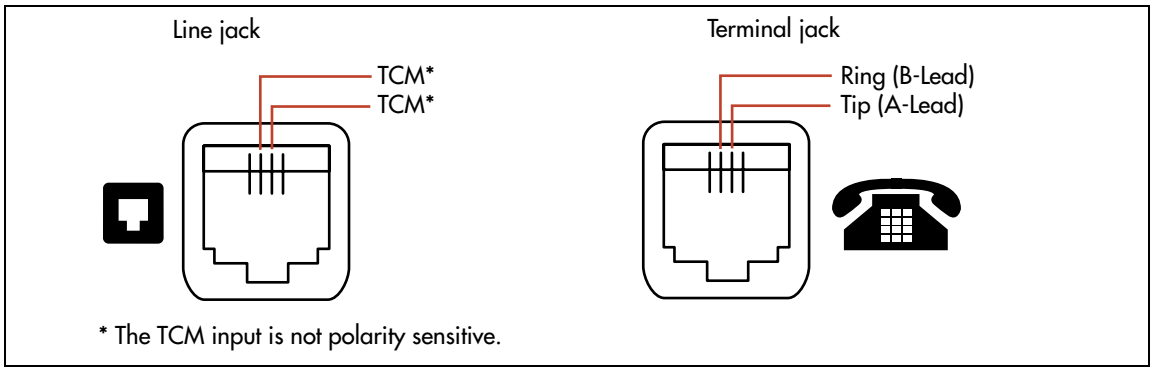
After you set up the correct environment, connect the Avaya BCM50 system and the analog device to the ATA2, and then connect the power. See the figure ATA2 top view on page 118.

Figure 55 ATA2 top view



The figure ATA2 pin outs on page 119 shows the pinouts for the connection cables.

Figure 56 ATA2 pin outs



To connect the ATA2

1. Connect one end of a line cord to the ATA2 terminal jack.
2. Connect the other end to your telephone, modem, or fax.
3. Connect one end of a line cord to the ATA2 line jack.
4. Connect the other end to an available station port on the Avaya BCM50 system.
5. For a 120 V or 230 V system, plug the DIN connector of the power supply cord into the power supply connector receptacle. Plug the adapter into a standard AC outlet.

Caution: In North America, the ATA2 must be powered from a Class 2 power source that is UL- and CSA-approved.
In Europe, the ATA2 must be powered from a Class II power source that is CE marked.

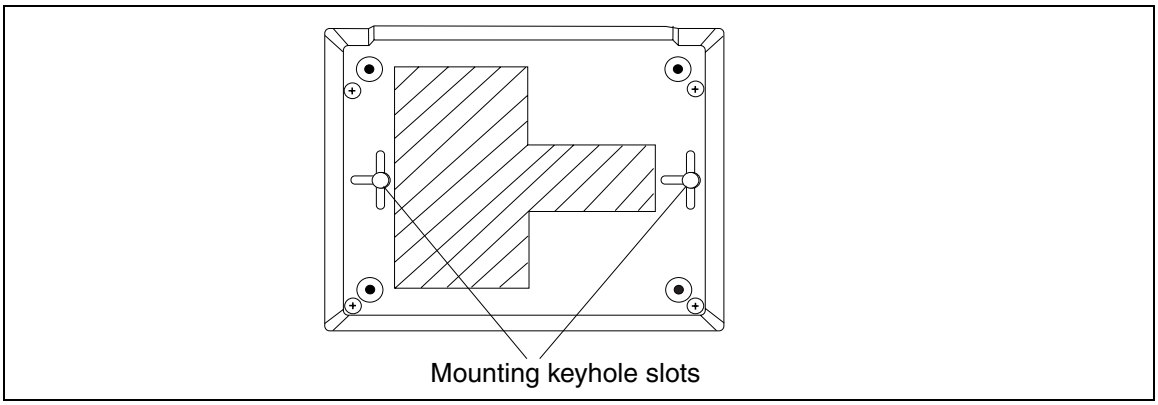
Mounting the ATA2

After the ATA2 is correctly connected, you can mount the unit on a wall as described in this section.

To mount the ATA2 on a wall

1. When using 0.5 mm wire (24-AWG), select a location within 800 m (2600 ft.) of the Avaya BCM50.
2. Allow 12.5 cm (5 in.) clearance for the line jack, terminal jack, and power supply connector.
3. Screw two 4-mm (#8) screws into the wall 130 mm (5.25 in.) apart. Leave 6 mm (0.25 in.) of the two screws showing.
4. Align the slots at the back of the ATA2 unit over the screws. Push the unit against the wall. The line jack, terminal jack, and power supply connector must be at the top of the ATA2. See the figure ATA2 back view on page 120.

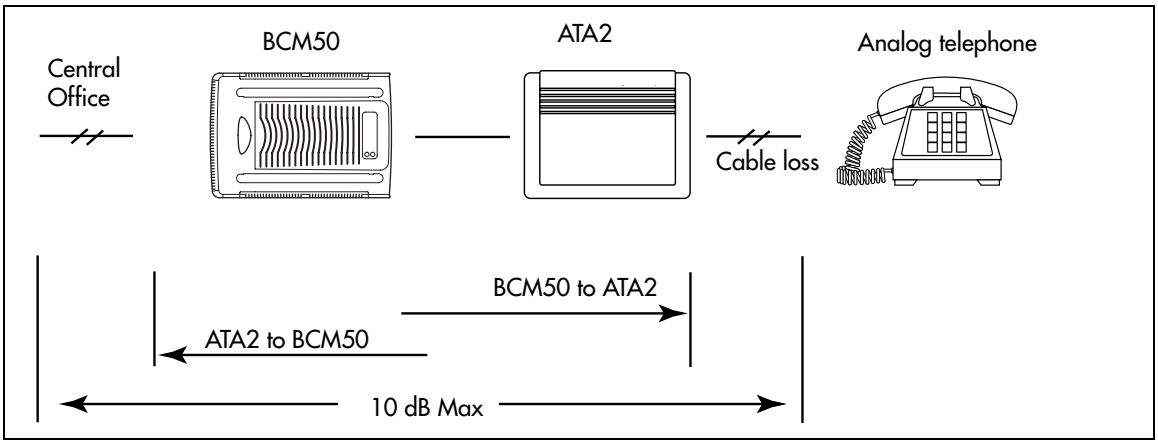
Figure 57 ATA2 back view



Test insertion loss measurement

The maximum loss for ATA2 to Central Office (CO) configuration must not exceed 10 dB. See the figure Insertion loss from the CO to the analog telephone on page 120.

Figure 58 Insertion loss from the CO to the analog telephone



Longitudinal balance to ground	50 dB 60 to 4000 Hz With IEEE 455–1976 test
Overload level	3 dB

Measure the total insertion loss between the CO and analog device by using standard dial-up test lines with a transmission test set (for example, Hewlett-Packard 4935A Transmission Test Set).

To measure the insertion loss from the CO to the analog device

1. Establish a connection to the 1 mW, 1 kHz, CO service line with an analog telephone attached to the ATA2.
2. Ensure that the analog port terminates correctly in 600 ohms:
   - Replace the analog telephone with the test set.
   - Use RECEIVE/600 OHM/HOLD mode on the test set.
3. Ensure that the test set connects in parallel to the service line before removing the analog telephone or the line drops.
4. Remove the single-line telephone.
5. Measure the 1 kHz tone at the far end of the analog port, where the analog loop ends and where the analog device connects.

Note: The tone must be greater than –10 dB (for example: –9 dB is acceptable).

To measure the insertion loss from the analog device to the CO

1. Establish a connection to a silent termination on the CO service line with an analog telephone attached to the ATA2.
2. Make sure the analog port terminates correctly in 600 ohms by:
   - Replace the analog telephone with the test set.
   - Use TRANSMIT/600 OHM/HOLD mode on the test set.
3. Make sure the test set connects in parallel to the service line before removing the analog telephone or the line drops.
4. Remove the analog telephone.
5. Introduce a 1 kHz tone into the analog line at –10 dBm, and measure the level at the CO exchange.

Note: The difference in levels is the transmit loss and must be less than 10 dB (for example, 9 dB is acceptable).

Configuring the ATA2

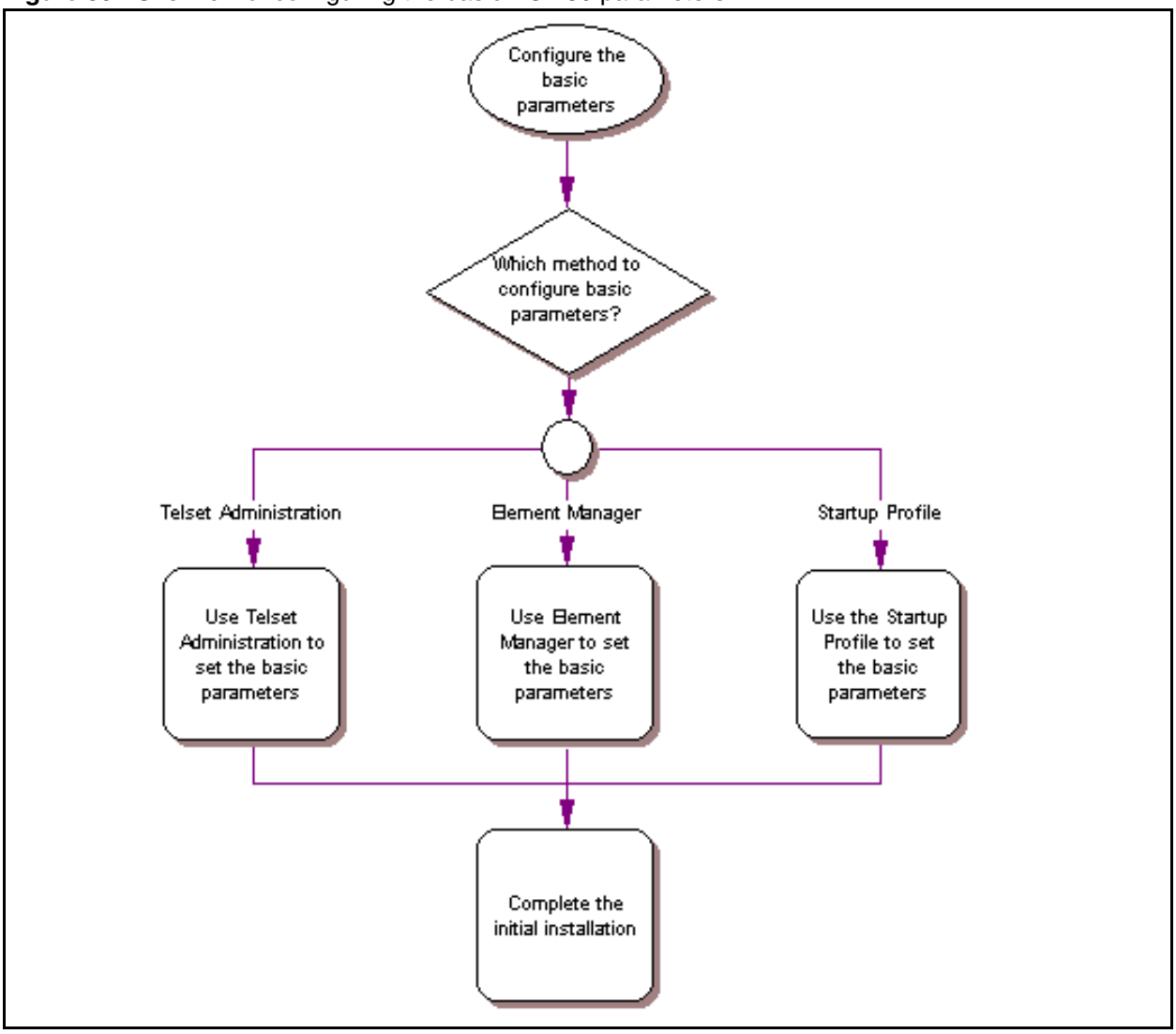
Configure the ATA2 using Business Element Manager or Telset Administration. For detailed configuration information, see the *Avaya Business Communications Manager 6.0 Configuration—Devices*.

Chapter 12
Configuring the Avaya BCM50 system

This section provides information about configuring the basic Avaya Business Communications Manager 50 (BCM50) parameters. You can configure advanced parameters using Business Element Manager or Telset Administration after the Avaya BCM50 system is operational.

The figure Overview of configuring the basic BCM50 parameters on page 123 shows an overview of configuring the basic BCM50 parameters.

Figure 59 Overview of configuring the basic BCM50 parameters


Configure the basic parameters
Which method to configure basic parameters?
Telset Administration
Element Manager
Startup Profile
Use Telset Administration to set the basic parameters
Use Element Manager to set the basic parameters
Use the Startup Profile to set the basic parameters
Complete the initial installation

For simplicity, you can configure the basic BCM50 parameters in two stages:

- Initial parameters overview on page 124
- Startup parameters overview on page 125

Initial parameters overview

The initial parameters are the required parameters that you can configure using Telset Administration, Business Element Manager, or the Startup Profile. See the table Initial parameters on page 124 for a list of the initial parameters.

Table 20 Initial parameters

Parameters	Telset Administration	Business Element Manager	Startup Profile
Keycode	Feature 9*8 > Feature codes	Configuration > System > Keycodes	Keycode
IP address: • Obtain dynamically • IP address • IP subnet mask • Default gateway	Feature 9*8 > IP Address	Configuration > System > IP Subsystem	IP Address
Modem: • Enable/disable modem	Feature 9*8 > Modem	Configuration > Resources > Dial Up interfaces	Modem
System: • Region	Feature **PROFILE	Administration > Utilities > Reset > Cold Reset Telephony Services	System
Telephony startup: • Template • Start DN	Feature **STARTUP	Administration > Utilities > Reset > Cold Reset Telephony Services	Telephony Startup
Voice mail: • Attendant DN • UI style • Language • From Line • To Line • Number of rings	Feature 983	Configuration > Applications > Voice Messaging/Contact Center	Voice Mail Startup
User account: • Telset user ID (numeric) • Telset password (numeric)	Feature 9*8 > User Accounts	Configuration > Administrator Access > Accounts and Privileges > View by Accounts tab	User Account

Startup parameters overview

The startup parameters are the remaining required parameters that you cannot configure using Telset Administration. You must configure these parameters using Business Element Manager or the Startup Profile. See the table Startup parameters on page 125 for a list of the startup parameters.

Table 21 Startup parameters (Sheet 1 of 2)

Parameters	Telset Administration	Business Element Manager	Startup Profile
System: • System name	N/A	Configuration > System > Identification	System
System: • System ID	N/A	Configuration > System > Keycodes (View ID is set automatically and cannot be changed)	System
Time: • Date and Time source • NTP server address • Date and time • Time zone	N/A	Configuration > System > Date and Time	Time
DHCP server: • Use DHCP Server on Integrated Router • Enable/disable server • IP domain name • Primary DNS • Secondary DNS • Default gateway	N/A	Configuration > Data Services > DHCP Server > General Settings tab	DHCP Server
IP Deskphones: • Enable registration • Enable global pwd • Global pwd • Auto-assign DNs • Advertisement/Logo	N/A	Configuration > Resources > Telephony Resources > IP & Application Sets	IP Deskphones
SNMP Agent: • Enable/disable SNMP agent • Minimum security • SNMP version support	N/A	Configuration > Administrator Access > SNMP > General tab	SNMP Agent
SNMP community: • Community string • Type of access	N/A	Configuration > Administrator Access > SNMP > Community Strings tab	SNMP Community
SNMP manager: • Manager IP address	N/A	Configuration > Administrator Access > SNMP > General tab	SNMP Manager

Table 21 Startup parameters (Sheet 2 of 2)

Parameters	Telset Administration	Business Element Manager	Startup Profile
User account: • User ID • Group • Description • Callback number	N/A	Configuration > Administrator Access > View by Accounts tab	User Account
SRG Main Office: • VoIP Trunk Access Code • Test Local Mode Timeout • Primary Network Connect Server Address • Alternate Network Connect Server Address • Network Connect Server Port • Heartbeat Protocol Port • H.323 ID • Numbering Plan ID • Type of Number • Node ID • MO Access Code Length	N/A	Configuration > Resources > Survivable Remote Gateway > S1000 Main Office Settings tab	SRG Main Office

Chapter 13
Using Telset Administration to set the basic parameters

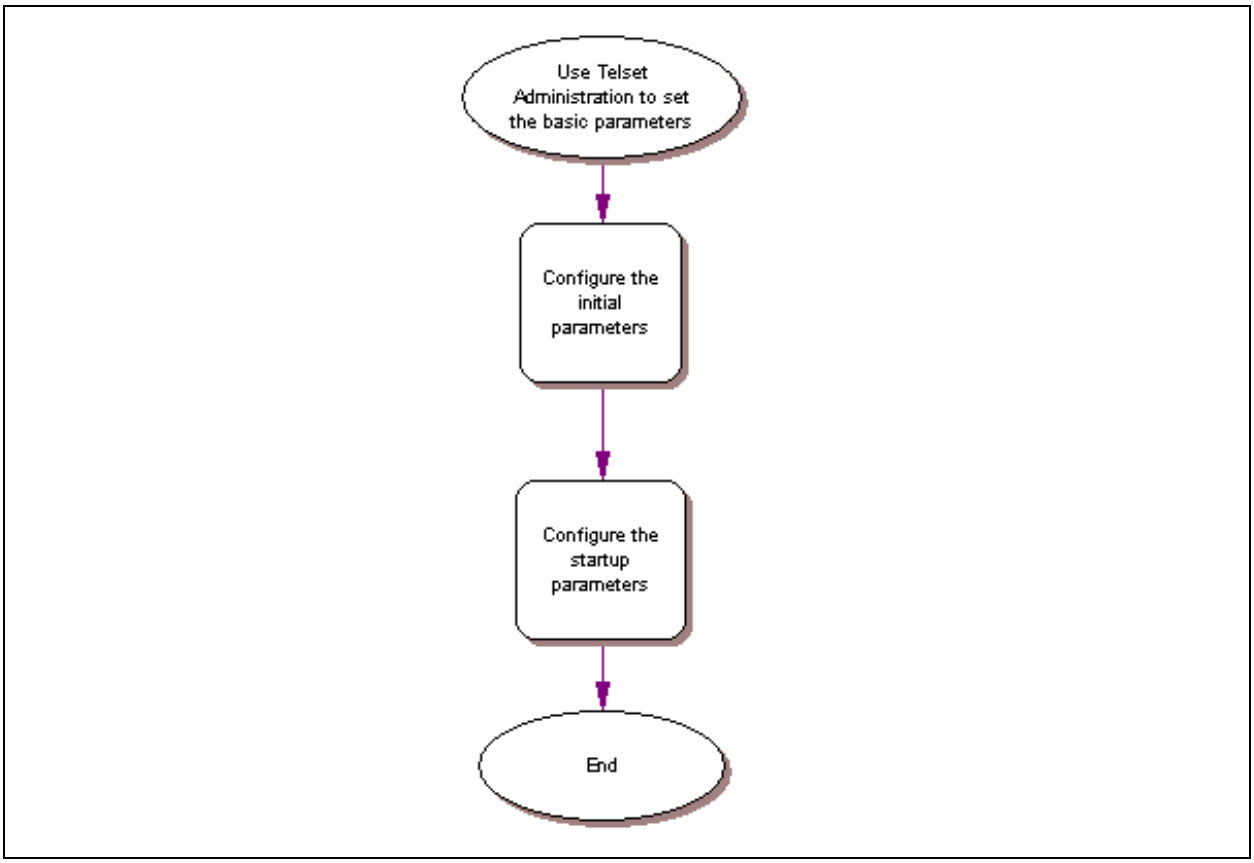
You can use Telset Administration through a digital telephone with a two-line display to set the Avaya Business Communications Manager 50 (Avaya BCM50) configuration parameters.

You cannot set all the basic parameters using Telset Administration. Therefore, after configuring the initial parameters, you must use Business Element Manager to set the startup parameters. See Configuring the startup parameters on page 138.

For more information about Telset Administration, see the *Telset Administration Guide*.

The figure Overview of using Telset Administration on page 127 shows an overview of using Telset Administration to set the basic parameters.

Figure 60 Overview of using Telset Administration


Use Telset Administration to set the basic parameters
Configure the initial parameters
Configure the startup parameters
End

Configuring the initial parameters

Use the following procedures to configure the initial parameters for the Avaya BCM50 using Telset Administration:

- To enter the keycodes on page 128
- To configure the IP address on page 129
- To configure the modem on page 129
- To select the region on page 130
- To select the telephony startup template and start DN on page 130
- To initialize voice mail on page 130
- To create Telset user accounts on page 130

To enter the keycodes

1. Select Feature 9*8 from a two-line display telephone.
2. Enter the following user ID and password:
   User ID: **SETNNA**
   Password: **CONFIG**

   The numerical values of the user ID and password are 738662 and 266344, respectively.
3. Press **NEXT** to scroll through the menu and select **Feature Codes**.
4. Press **OK**.

   The system ID (SID) displays.
5. Press **NEXT**.
6. Enter your sequence ID.
7. Press **NEXT** to scroll through the list and perform one or both of the following tasks:

   a. To activate features, select **Feature List**.

   - Press **SHOW** to view the available features.
   - Use the soft keys to activate features for your system.

   b. To enter a new keycode, select **Entitlement Code**.

   - Press **SHOW** to view the current keycode.
   - Use the soft keys to modify the keycode for your system.

   For more detailed information about retrieving and entering the keycode for your system, see the *Keycode Installation Guide*.

To configure the IP address

1 Select Feature 9*8 from a two-line display telephone.

2 Enter the following user ID and password:
User ID: **SETNNA**
Password: **CONFIG**

The numerical values of the user ID and password are 738662 and 266344, respectively.

3 Press **NEXT** to scroll through the menu and select **IP Address**.

4 Press **OK**.

5 Press **CHNGE** to modify the IP settings. The display screen shows whether DHCP is enabled or disabled.

6 Perform one of the following tasks:

a If DHCP is currently enabled:

- Press **DIS** to disable DHCP. You can modify the IP Address, Subnet Mask, and Default Gateway. However, these settings have no effect if the system is disabled.
- Press **IP** to modify the following IP settings:
  - IP Address
  - Subnet Mask
  - Default Gateway

b If DHCP is currently disabled:

- Press **ENL** to enable DHCP. The system must reboot to enable DHCP.
- Press **IP** to modify the IP settings. You can modify the IP Address, Subnet Mask, and Default Gateway. However, these settings have no effect if the system is disabled.

7 Press **Back** to reboot the system.

To configure the modem

1 Select Feature 9*8 from a two-line display telephone.

2 Enter the following user ID and password:
User ID: **SETNNA**
Password: **CONFIG**

The numerical values of the user ID and password are 738662 and 266344, respectively.

3 Press **NEXT** to scroll through the menu and select **Modem**.

4 Press **OK**. The display screen shows whether the modem is enabled or disabled.

5 Perform one of the following tasks:

a If the modem is disabled, press **ENL** to enable the modem.

b If the modem is enabled, press **DIS** to disable the modem.

For more information about modem configuration, see the *Networking Configuration Guide*.

To select the region

Set the Region using Feature **PROFILE from a two-line display telephone.

For information about using Telset Administration to set this parameter, see the *Telset Administration Guide*.

To select the telephony startup template and start DN

Set the Template and Start DN using Feature **STARTUP from a two-line display telephone.

Note: This is available for only 15 minutes after the system starts.

For information about using Telset Administration to set this parameter, see the *Telset Administration Guide*.

Configure other telephony startup parameters using Feature **CONFIG. For more information, see the *Telset Administration Guide*.

To initialize voice mail

Initialize your voice-mail system using Feature 983 from a two-line display telephone.

For information about using Telset Administration to initialize your voice mail system, see the *CallPilot Telephone Administration Guide*.

To create Telset user accounts

Note: You can create Telset accounts using only Telset Administration. To create Business Element Manager accounts, you must use Business Element Manager.

1. Select Feature 9*8 from a two-line display telephone.
2. Enter the following user ID and password:
   User ID: **SETNNA**
   Password: **CONFIG**

   The numerical values of the user ID and password are 738662 and 266344, respectively.
3. Press **NEXT** to scroll through the menu and select **User Accounts**.
4. Press **OK**. The Accounts screen appears.
5. Press **CHNGE** to create an account.
6. Press **NEXT** to scroll through the list of available accounts to create.
7. Press **CRT** to create the account.

If you see the **DEL** command instead of the **CRT** command, then the account already exists.

8 Press **BACK**. The Accounts screen appears.

9 Press **NEXT**. The password screen appears.

10 Press **CHNGE** to change the password.

11 Press **NEXT** to scroll through the list of available accounts.

12 Press **CHNGE** to change the password for the selected account.

13 Enter the new password for the account.

14 Enter the new password again to confirm it.

For more information about creating user accounts using Business Element Manager, see the procedure To create user accounts on page 143.

Next step

After you configure the initial parameters using Telset Administration, you must configure the startup parameters using Business Element Manager. For more information, see Configuring the startup parameters on page 138.

Chapter 14
Using Business Element Manager to set the basic parameters

The Business Element Manager application provides a computer-based client interface that can connect to devices over an IP network and display the programming interface for that device.

You can use the latest Business Element Manager version to manage all previous Avaya Business Communications Manager (Avaya BCM) systems that require Business Element Manager. You need only one instance of Business Element Manager on your computer.

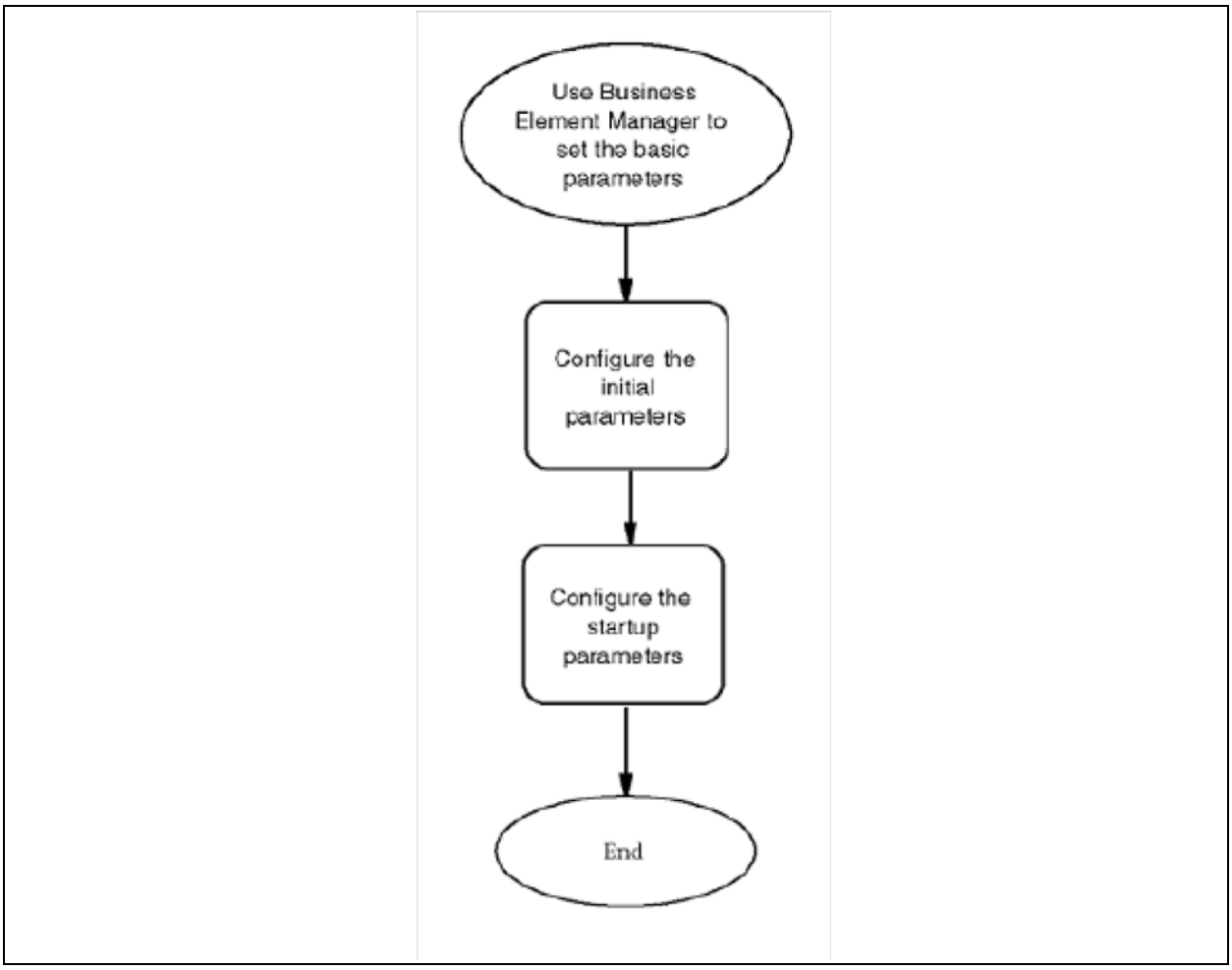
Through Business Element Manager, you can configure all of the basic parameters:

- Configuring the initial parameters on page 136
- Configuring the startup parameters on page 138

For more information about using Business Element Manager, see the *Avaya Business Communications Manager 6.0 Administration and Security*.

The figure Overview of using Business Element Manager on page 134 shows an overview of using Business Element Manager to set the basic parameters.

Figure 61 Overview of using Business Element Manager


Use Business Element Manager to set the basic parameters
Configure the initial parameters
Configure the startup parameters
End

Prerequisites

Business Element Manager has the following system requirements:

- Operating System: Windows XP, Windows Server 2003, Windows Server 2008, Windows Server 2008 Release 2, Windows Vista, or Windows 7 (32 bit and 64 bit versions). Business Element Manager also supports Citrix Presentation Server 4.0.
- RAM: minimum 256 MB, recommended 512 MB
- free space: 75 MB

Accessing the Avaya BCM50 system

After you connect your computer to the Avaya BCM50 system, either through the OAM port or through a LAN connection, you can download Avaya Business Element Manager from the Administrator Applications area of the BCM Web page.

You can use the latest Business Element Manager version to manage all previous BCM systems that require Business Element Manager. You need only one instance of Business Element Manager on your computer.

To access the Avaya BCM50 Web page

1. Open a Web browser and enter the Avaya BCM50 system IP address (default is 10.10.10.1).

   The Enter Network Password dialog box appears.

2. Enter the user name and password (defaults are shown below):

   User name: **nnadmin**

   Password: **PlsChgMe!**

3. Click **OK**.

   The Welcome to BCM Web page appears.

To download and install Business Element Manager

1. From the Welcome to Avaya BCM Web page, click **Administrator Applications**.

   The Administrator Applications page appears.

2. From the Administrator Applications page, click **Business Element Manager**.

   The Business Element Manager panel appears.

3. Click **Download Business Element Manager** on the right side of the screen.

4. When BCM50 Business Element Manager finishes downloading, double-click the application and follow the installation instructions.

To connect to the Avaya BCM50 system using Business Element Manager

1. Open Business Element Manager.
2. From the Network menu, select **New Network Element**, and then select **Business Communications Manager**.
3. Enter the Avaya BCM50 system IP address in the dialog box (default is 10.10.10.1).
4. Click **OK**.
5. From the Network Elements folder, select the BCM50 system IP address.
6. Enter the following user name and password:

   User name: **nnadmin**

   Password: **PlsChgMe!**
7. Click **Connect**.

   You are now connected to the BCM50 system.

Configuring the initial parameters

Use the following procedures to configure the initial parameters for the Avaya BCM50 system using BCM50 Business Element Manager:

- To enter a keycode on page 136
- To configure the LAN IP address on page 137
- To configure the modem on page 137
- To configure the startup template for telephony services on page 137
- To initialize voice mail on page 138

To enter a keycode

1. From the **Configuration** tab, click the **System** folder to expand it.
2. Select **Keycodes**.

   The Keycodes panel appears.
3. Click **Load File**.

   The Open dialog box appears.
4. Select the keycode file for your system, and then click **Open**.

For details about generating and entering the keycodes for your system, see the *Keycode Installation Guide*.

To configure the LAN IP address

1 From the **Configuration** tab, click the **System** folder to expand it.

2 Select **IP Subsystem**.

3 Select the **General Settings** tab. It is normally selected by default.

4 Configure the IP Settings attributes. See the table Modify IP Settings attributes on page 137.

Table 22 Modify IP Settings attributes

Attribute	Description
Published IP address	The IP address of the BCM50 system.
Published IP Interface	The IP interface being used by the BCM50 system.
Default gateway	The gateway used by the BCM50 system.
Note: If you modify any of the attributes, then the Business Element Manager session disconnects.	

To configure the modem

1 From the **Configuration** tab, click the **Resources** folder to expand it.

2 Select **Dial Up Interfaces**.

3 Select the **Modem Dial-In Parameters** tab.

4 Select the **Enable modem dial-in** check box to enable the modem.

For more information about modem configuration, see the *Networking Configuration Guide*.

To configure the startup template for telephony services

Note: This procedure erases all the telephony programming that is currently on the Avaya BCM50 system.

1 From the **Administration** tab, click the **Utilities** folder to expand it.

2 Select **Reset**.

3 Click **Cold Reset Telephony Services**.

The Cold Reset Telephony dialog box appears.

4 Configure the Cold Reset Telephony attributes. See the table Cold Reset Telephony attributes on page 137.

Table 23 Cold Reset Telephony attributes

Attribute	Description
Region	Specify the startup region.

Table 23 Cold Reset Telephony attributes

Attribute	Description
Template	Specify the startup template.
Start DN	Specify the startup DN. The default is 221.

5 Click **OK**.

To initialize voice mail

1 From the **Configuration** tab, click **Applications** folder to expand it.

2 Select **Voice Messaging/Contact Center**.

3 Click **Launch CallPilot Manager**.

The Quick Install Wizard form appears.

If your voice mail system is already initialized, you do not see the Quick Install Wizard. Instead you see the CallPilot Manager: Main Menu Web page.

4 Configure the attributes on the Quick Install Wizard form.

For more information, see the *CallPilot Manager Set Up and Operation Guide*.

Configuring the startup parameters

Use the following procedures to configure the startup parameters for the Avaya BCM50 system using Business Element Manager:

- To enter a name for your system on page 138
- To configure the date and time settings on page 139
- To configure DHCP server settings on page 139
- To configure IP Deskphones on page 141
- To configure SNMP settings on page 142
- To configure SNMP community strings on page 142
- To configure the SNMP manager list on page 143
- To create user accounts on page 143

To enter a name for your system

1 From the **Configuration** tab, click the **System** folder to expand it.

2 From the System folder, select **Identification**.

3 Enter a name for your system in the **System name** field.

To configure the date and time settings

1 From the **Configuration** tab, click the **System** folder to expand it.

2 Select **Date and Time**.

The Date and Time panel appears.

3 Configure the Date and Time attributes. See the table Date and Time attributes on page 139.

Table 24 Date and Time attributes

Attribute	Description
Date and Time source	Set to NTP if the system uses a network server to determine the correct time and date. Set to Trunk to receive time and date settings from PSTN (if available). Set to Manual to manually configure the time and date for your system.
NTP server address	If Date and Time source is set to NTP, then enter an address for the server.
Synch every (s)	The number of seconds specified to elapse between contacts with the NTP server. 1-XXXX: Number of seconds between contacts with the NTP server.
NTP security mode	Select whether the NTP security mode is secured or unsecured.
Raise alarm if clock differs by at least (s)	The number of discrepancy seconds specified that must occur before the system notifies you of a time difference from the NTP server, if the system automatically checks with the NTP server.
NTP key ID	ID for accessing the NTP.
NTP key string	Control key corresponding to ID for accessing the NTP.
Date and time	Use the calendar to select the correct date and time.
Time zone	Select the time zone for this system.

To configure DHCP server settings

Warning: If you have a main unit with an integrated router, you must first disable the DHCP server on the integrated router to use the DHCP server on the main unit.

1 From the **Configuration** tab, click the **Data Services** folder to expand it.

2 Select **DHCP Server**.

3 Select the **General Settings** tab.

4 If you have a main unit with an integrated router (BCM50a, BCM50e, BCM50ba, BCM50be), do one of the following:

- Select the **Use DHCP Server on Integrated Router** check box to use the DHCP server on the integrated router. The DHCP server on the main unit will be disabled.

Click **Launch Router WebGUI tool** to launch the router configuration tool.

For information about using the router WebGUI tool, see the *Integrated Router Configuration Guide* for your product.

- Clear the **Use DHCP Server on Integrated Router** check box to use the DHCP server on the main unit. You must first disable the DHCP server on the integrated router using the router WebGUI tool.

  For information about using the router WebGUI tool, see the *Integrated Router Configuration Guide* for your product.

5 Configure the attributes according to the table DHCP Server: General Settings attributes on page 140.

Table 25 DHCP Server: General Settings attributes

Attribute	Description
Use DHCP Server on Integrated Router	**Note:** This attribute is available only on main units with an integrated router (BCM50a, BCM50e, BCM50ba, BCM50be). Specify whether or not to use the DHCP server on the integrated router. If selected, the DHCP server on the integrated router is used, and the DHCP server on the main unit is disabled. If cleared, the DHCP server on the main unit is active. You must first disable the DHCP server on the integrated router to avoid networking conflicts.
DHCP server is	Select either enable or disable from the list.
IP domain name	The domain name of the network.
Primary DNS IP address	Specify the IP addresses of the primary DNS server in a valid dot format. Avaya BCM50 automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value.
Secondary DNS IP address	Specify the IP addresses of the secondary DNS server in a valid dot format. BCM50 automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value.
WINS server address	Specify the IP address of the WINS server. BCM50 automatically assigns the value for this parameter. If the IP address or subnet mask for the corresponding LAN interface changes, this value is overwritten. Use caution when changing this value.
WINS node type	Specify a client WINS node type. The BCM50 system automatically sets this value to H-node on all DHCP clients. This setting configures the DHCP client PCs to use P-node name resolution before resorting to B-node name resolution. **Note**: Use caution if you change this attribute.
Lease time	Specify the time, in seconds, for an address assignment until the client lease expires. The default is 259 200 seconds (72 hours).

To configure IP Deskphones

1 From the **Configuration** tab, click the **Resources** folder to expand it.

2 Select **Telephony Resources**.

3 From the Configured Devices column, select **IP Sets**.

The Details for Module area appears in the lower pane with the IP Terminal Global Settings tab as the default.

4 Configure the IP Terminal Global Settings attributes. See the table IP Terminal Global Settings attributes on page 141.

Table 26 IP Terminal Global Settings attributes

Attribute	Description
Enable registration	Select this check box to allow new IP clients to register with the system. **WARNING**: Remember to clear this check box when you finish registering the new telephones.
Enable global registration password	To require the installer to enter a password when IP deskphones are configured and registered to the system, select this box. If this box is not selected (disabled), a valid Telset user ID and password is required to register IP Deskphones.
Global password	If you select the Enable Global Registration Password check box, enter the password the installer enters on the IP Deskphone to connect to the system. If this check box is empty, no password prompt occurs during registration.
Auto-assign DNs	If you select this check box, the system assigns an available DN as an IP terminal requests registration. It does not prompt the installer to enter a set DN. If this check box is empty, the installer receives a prompt to enter the assigned DN during the programming session.
Advertisement/Logo	Any information in this field appears on the display of all IP telephones. For example, your company name or slogan (24 characters in length).

Tip: To automatically configure IP Deskphones with DNs assigned:

1) Select the **Enable registration** check box.

2) Select the **Enable global registration password** check box.

3) Leave the **Global password** field blank.

4) Select the **Auto-assign DNs** check box.

After the IP Deskphones are operational, clear the **Enable registration** check box.

You can configure other attributes on the IP Terminal Global Settings tab depending on the requirements for your system.

To configure SNMP settings

1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.

2 From the Administrator Access folder, select **SNMP**.

3 Select the **General** tab. It is normally selected by default.

4 From the SNMP Settings area, click **Modify**.

The Modify SNMP Settings dialog box appears.

5 Configure the attributes for Modify SNMP Settings. See the table Modify SNMP Settings attributes on page 142.

Table 27 Modify SNMP Settings attributes

Attribute	Description
Enable SNMP Agent	Choose whether to enable or disable the SNMP agent by selecting (or not selecting) the check box.
Minimum required security	Select the minimum required security for SNMP from the list.
SNMP Version Support	Select the SMNP version support from the list.

6 Click **OK**.

To configure SNMP community strings

1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.

2 From the Administrator Access folder, select **SNMP**.

3 Select the **Community Strings** tab.

4 Click **Add**.

The Add Community String dialog box appears.

5 Configure the Add Community String attributes. See the table Add Community String attributes on page 142.

Table 28 Add Community String attributes

Attribute	Description
Community string	Enter the name used as a key to uniquely identify an individual community entry on the SNMP agent.
Type of access	Specify the read and write access for this community. Available options are Read-Only and Read/Write.

6 Click **OK**.

7 Repeat steps 4 to 6 to add more community strings.

To configure the SNMP manager list

Use the SNMP manager list to specify IP addresses that can connect to the SNMP agent.

1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.

2 From the Administrator Access folder, select **SNMP**.

3 Select the **General** tab. It is normally selected by default.

4 In the SNMP Manager List area, click **Add**.

The Add Manager dialog box appears.

5 Enter the IP address in the **Manager IP Address** field.

6 Click **OK**.

7 Repeat steps 4 to 6 to add another manager IP address.

To create user accounts

1 From the **Configuration** tab, click the **Administrator Access** folder to expand it.

2 From the Administrator Access folder, select **Accounts and Privileges**.

3 Select the **View by Accounts** tab.

4 Click **Add** to add a user account.

The Add Account dialog box appears.

5 Configure the Add Account attributes. See the table Add Account attributes on page 143.

Table 29 Add Account attributes

Attribute	Description
Description	Enter a description for this account.
User ID	Enter a descriptive name for the user or the user function.
Password	Enter a password for this account.
Telset user ID (numeric)	If the user performs administration through the Telset interface, enter a number for the user ID.
Telset password (numeric)	Enter a password for the Telset User ID.
Modem Callback Number	If Callback is required, enter the number to which the system calls back to verify the dial-up user access.
Modem Callback Passcode	This is the code the system uses to confirm the callback is legitimate.
ISDN Callback Number	If ISDN Callback is required, enter the number to which the system calls back to verify the dial-up user access.
ISDN Callback Passcode	This is the code the system uses to confirm that the ISDN callback is legitimate.
Change Password On Login	Select this check box to force the user to change the password upon first login.
Change Password On Login Telset	Select this check box to force the user to change the Telset password upon first login.

6 Click **OK**.

7 Repeat steps 4 to 6 to create more user accounts.

To configure SRG

1 From the **Configuration** tab, click the **Resources** folder to expand it.

2 Select **Survivable Remote Gateway** from the Resources folder.

3 Select the **S1000 Main Office Settings** tab.

4 Configure the S1000 Main Office Settings attributes. For more information about configuring an SRG system, see the *SRG50 Configuration Guide*.

Next step

After you set the basic parameters, proceed to Completing the initial installation (optional) on page 151.

Chapter 15
Using the Startup Profile to configure parameters

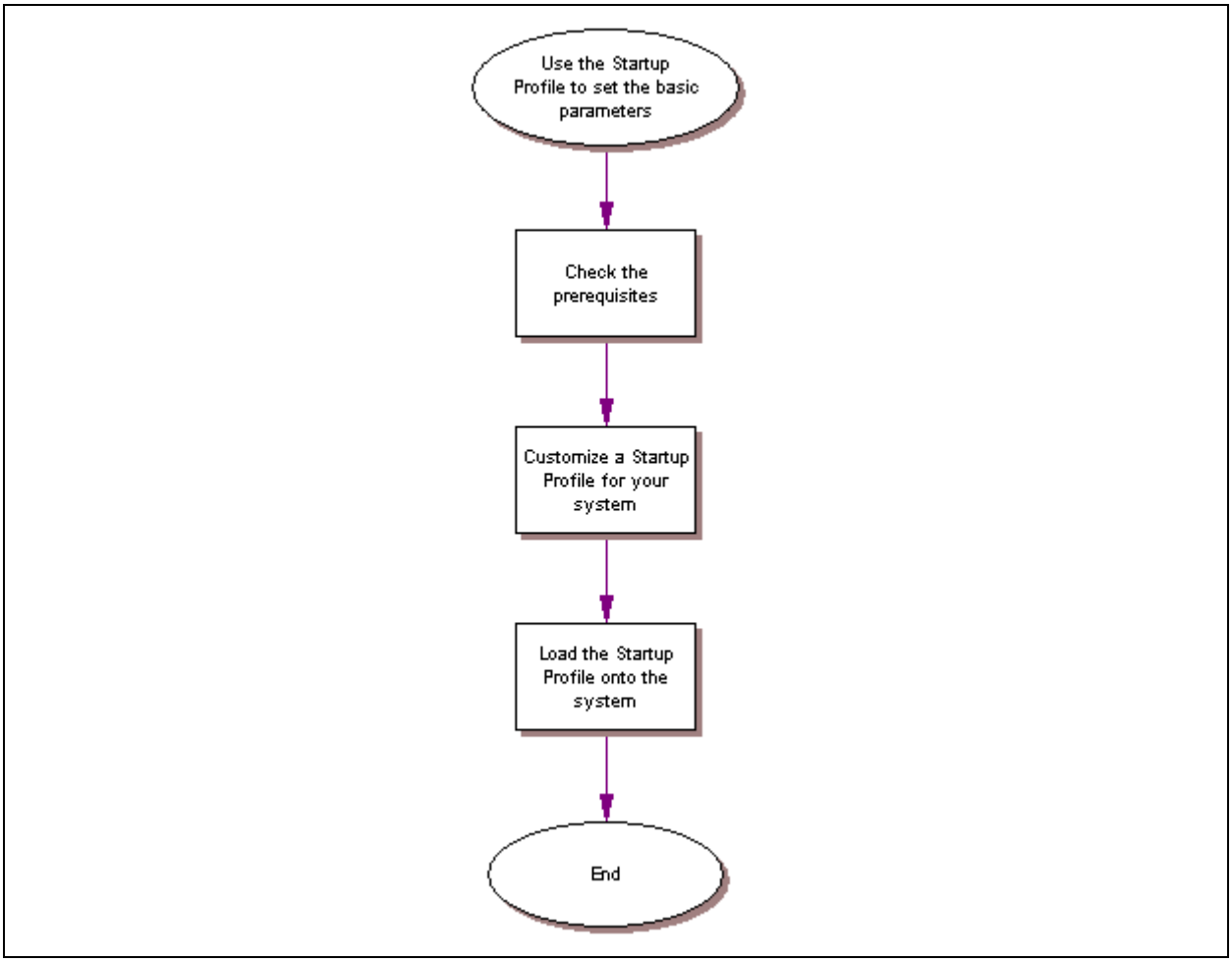
An experienced administrator uses the Startup Profile tool to customize a template with common Avaya Business Communications Manager 50 (Avaya BCM50) parameters. The administrator uses this template to configure a single system or multiple systems.

You create the Startup Profile using the Startup Profile template (a Microsoft Excel template). You then use a USB storage device to transfer the Startup Profile data to the Avaya BCM50 main unit.

Loading the Startup Profile adds approximately 5 minutes to the time for the BCM50 system to boot. After you successfully apply the Startup Profile, the BCM50 system automatically reboots to complete the BCM50 system configuration. After the BCM50 system reboots, the Startup Profile is fully loaded.

The figure Overview of using the Startup Profile on page 145 shows an overview of using the Startup Profile.

Figure 62 Overview of using the Startup Profile


Use the Startup Profile to set the basic parameters
Check the prerequisites
Customize a Startup Profile for your system
Load the Startup Profile onto the system
End

Note: You must format the USB storage device for the FAT32 file system. If necessary, reformat the USB storage device by plugging it into the USB port of your computer, right-clicking the USB device icon, and selecting FAT32 reformatting. This destroys any data on the USB.

Note: The Startup Profile works only on an Avaya BCM50 system with no keycodes loaded. After the keycodes are loaded, the Startup Profile does not work. This condition prevents unintentional overwriting of the parameters of a configured system.

For information about setting the initial parameters on the Avaya BCM50 system:

- Startup Profile requirements on page 146
- Configuring basic parameters on page 147

Startup Profile requirements

To use the Startup Profile template, you need the following:

- a computer with a USB port
- Microsoft Excel 2000 or newer
- the Avaya BCM50 Startup Profile template (Microsoft Excel template)

  If you do not have the Startup Profile template on your computer, you can get a copy from the the Avaya support Web site (www.avaya.com/support) or the Administrator Applications page on the main unit. For details about getting the Startup Profile template from the main unit, see the procedure To download the Startup Profile template on page 147.
- a portable USB storage device compatible with USB 1.1 (formatted for FAT32)

Note: The Startup Profile template uses macros to perform certain functions. You must set your Excel macro security level to medium or low to enable the macros:

1. From the Tools menu, select **Macros**.
2. Select **Security.**
3. Select **Medium** or **Low**.
4. Exit from Excel.
5. Open the Startup Profile template (in Excel).
6. Enable macros if you are prompted.

To download the Startup Profile template

1. Access the Avaya BCM50 Web page (see the procedure To access the Avaya BCM50 Web page on page 135).
2. From the **Welcome to BCM** Web page, click **Administrator Applications**.

   The Administrator Applications page appears.
3. From the **Administrator Applications** page, click **Startup Profile Template**.

   The Startup Profile Template panel appears.
4. Read the information on this panel.
5. Click **Download Startup Profile Template** on the right side of the screen, and follow the instructions to download the template.

Configuring basic parameters

To customize a Startup Profile for your system

Note: You cannot copy and paste data between cells in the Startup Profile. If you attempt this, the data validation within the spreadsheet becomes corrupt. If corruption occurs, download another copy of the Startup Profile template from the Avaya BCM50 main unit.

1. On a computer with a USB port and Microsoft Excel, open the Startup Profile template (Microsoft Excel template).

   If you do not have a copy of the Startup Profile template, see the procedure To download the Startup Profile template on page 147.
2. For instructions about using the Startup Profile template, see the **Usage Instructions** tab.
3. Click the **StartupProfileTemplate** tab to begin entering information in the Startup Profile template.
4. Enter your Avaya BCM50 system ID in the System ID field in the Startup Profile template.

   The system ID is on the box of the main unit and on the main unit itself. If you enter the wrong system ID, the Startup Profile does not work with your system.
5. Click the large button at the top of the Startup Profile template to save a version of the Startup Profile (.sps file) and a version of the Startup Profile editor (Excel spreadsheet) on your computer.

   The file names for the Startup Profile editor and the Startup Profile consist of the system ID followed by the appropriate extension.

Note: Never edit the Startup Profile (.sps file) directly; always use the Startup Profile editor to make changes.

6 Enter the remaining information into the Startup Profile editor that you want loaded onto the BCM50 main unit.

The Startup Profile editor contains explanations of the various parameters. Click the cell where you want to enter information, and the Help text appears.

You can specify which parameters to load onto your system by selecting **Apply**. If you do not want to load certain parameters, select **Ignore**.

7 After you enter all the information, click the large button at the top of the Startup Profile template to save a version of the Startup Profile (.sps file) and a version of the Startup Profile editor (Excel spreadsheet) on your computer.

8 Exit from Microsoft Excel.

9 Insert the USB storage device into the USB port of the computer.

10 Copy the Startup Profile (.sps file) to the root directory of the USB storage device.

11 To load your keycodes using the Startup Profile, copy the keycode file to the root directory of the USB storage device.

The name of the keycode file on the USB storage device must exactly match the file name you entered in the Startup Profile editor.

12 Remove the USB storage device from the USB port of the computer.

The Startup Profile is now stored on the USB storage device.

To load the Startup Profile data onto the Avaya BCM50 system

1 Disconnect the power supply from the main unit.

2 Insert the USB storage device into the USB port on the main unit.

If the Avaya BCM50 system has a UPS, insert the USB storage device into the Linux-compatible USB hub.

3 Connect the power supply to the BCM50 system.

The BCM50 automatically detects the Startup Profile file and loads the information during the bootup sequence. Loading the Startup Profile adds approximately 5 minutes to the time for the BCM50 system to boot. After you successfully apply the Startup Profile, the BCM50 system automatically reboots to complete the BCM50 system configuration. After the BCM50 system reboots, the Startup Profile is fully loaded.

If an error occurs, the status LED flashes red. View the log file (written to the USB storage device) for a description of the Startup Profile errors. If no errors exist, the Avaya BCM50 system automatically reboots to complete the system configuration. After the reboot finishes, the power and status LEDs are solid green.

Note: The Startup Profile works only on a BCM50 system with no keycode loaded. After a keycode is loaded, the Startup Profile does not work. This condition prevents unintentional overwriting of the parameters of a configured system.

4 Remove the USB storage device from the USB port on the BCM50 or the USB hub.

Note: Make sure the bootup sequence is complete before removing the USB storage device from the BCM50 system.

5 Connect the 25-pair cable to the RJ-21 telephony connector on the BCM50 main unit.

The Startup Profile is now loaded on your BCM50 system.

Next step

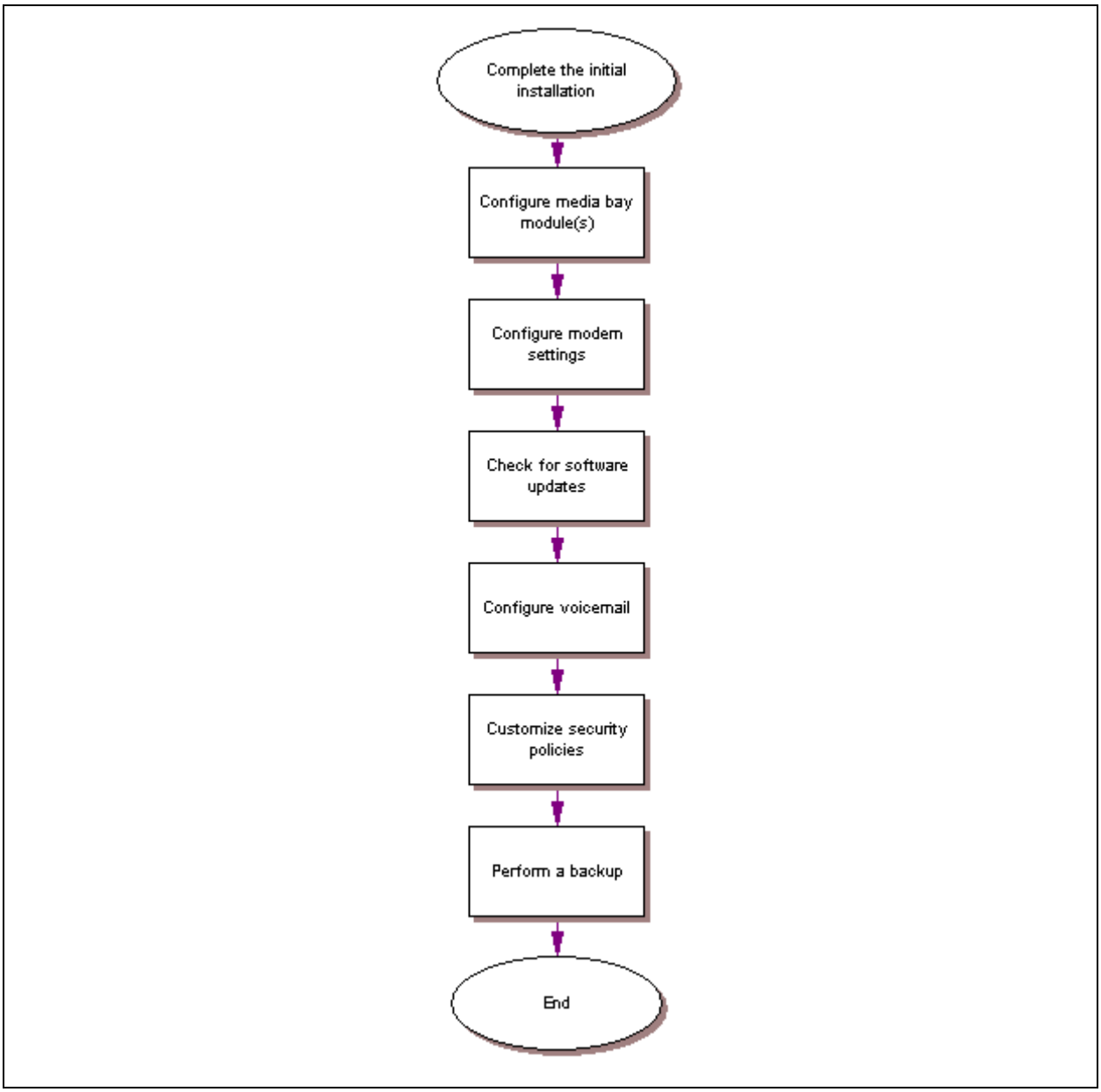
After you load the Startup Profile, you can connect the data networking cables. For information about connecting these cables, see Completing the initial installation (optional) on page 151.

Chapter 16
Completing the initial installation (optional)

This section provides information about completing the initial installation of your Avaya Business Communications Manager 50 (Avaya BCM50) system. These options are described for informative purposes only.

The figure Overview of completing the initial installation on page 152 shows an overview of completing the initial installation.

Figure 63 Overview of completing the initial installation



After the basic configuration finishes, you can further customize your system by using the following configuration options:

- Configuring the media bay module on page 153
- Configuring modem settings on page 154
- Checking for software updates on page 154
- Configuring voice mail on page 154
- Customizing security policies on page 154
- Performing a backup on page 154

Configuring the media bay module

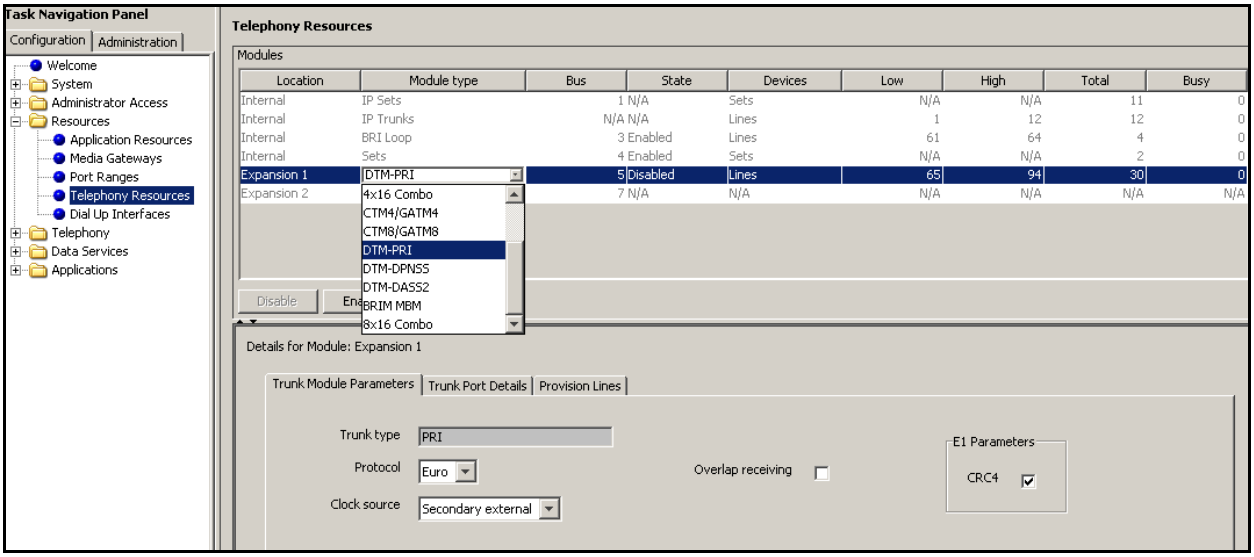
For information about installing a media bay module (MBM) and setting the dip switches, see Installing a media bay module in an expansion unit on page 97.

For details about connecting the cables between the main unit and expansion units, you can also see Connecting the expansion unit on page 100.

To configure the MBM(s)

1. Open Business Element Manager and connect to your Avaya BCM50 system.
2. From the **Configuration** tab, click the **Resources** folder to expand it.
3. From the Resources folder, select **Telephony Resources**. See the figure Telephony Resources page on page 153.

Figure 64 Telephony Resources page



4. In the **Modules** section, select the expansion unit to configure.

   You must include the expansion port feature in your purchased keycode. If you activate one expansion port only, the expansion port on the left (expansion/LAN port 2) is active. Therefore, Expansion 1 must be connected to the active port (expansion/LAN port 2). For location of the LAN ports, see the figure Expansion ports on page 100 and the figure Connecting the expansion unit to the BCM50 main unit on page 101.

5. Double-click the **Module type** field to display the list.
6. Select the type of MBM that you installed in the expansion unit.
7. Click **Enable**.
8. If you installed a second expansion unit, repeat steps 4 to 7 to enable the second MBM.

You can set other parameters for the MBMs depending on the type of MBM you installed.

Configuring modem settings

Your system modem is either enabled or disabled depending on the configuration you chose during your basic configuration. If you use the modem for management tasks, you can customize settings, including dial-in and dial-out settings depending on your specific needs.

For information about configuring the modem, see the *Avaya Business Communications Manager 6.0 Configuration—System*.

Checking for software updates

Avaya frequently updates the BCM50 software. Therefore, a standard part of any installation is to ensure your system has the latest version of the software.

For information about checking for and installing software updates, see the *Avaya Business Communications Manager 6.0 Administration and Security*.

Configuring voice mail

Your voice mail system was initialized during the basic configuration of your Avaya BCM50 system. You must still configure your voice mail to take advantage of the many feature available.

If you need to perform further configuration tasks, see the documentation for your voice mail system.

For information about using the Web-based interface to configure your voice mail system, see the *CallPilot Manager Set Up and Operation Guide*, and for information about using Telset Administration to configure your voice mail system, see the *CallPilot Telephone Administration Guide*.

Customizing security policies

You configured a system password and security settings during the basic configuration of your Avaya BCM50 system. Depending on your needs, you can perform further configuration of the security policies.

For information about customizing the security policies, see the *Avaya Business Communications Manager 6.0 Administration and Security*.

Performing a backup

You can backup your Avaya BCM50 system at regular intervals, including after initial installation. Performing a backup ensures that you have a copy of your system data available to restore the system, if needed.

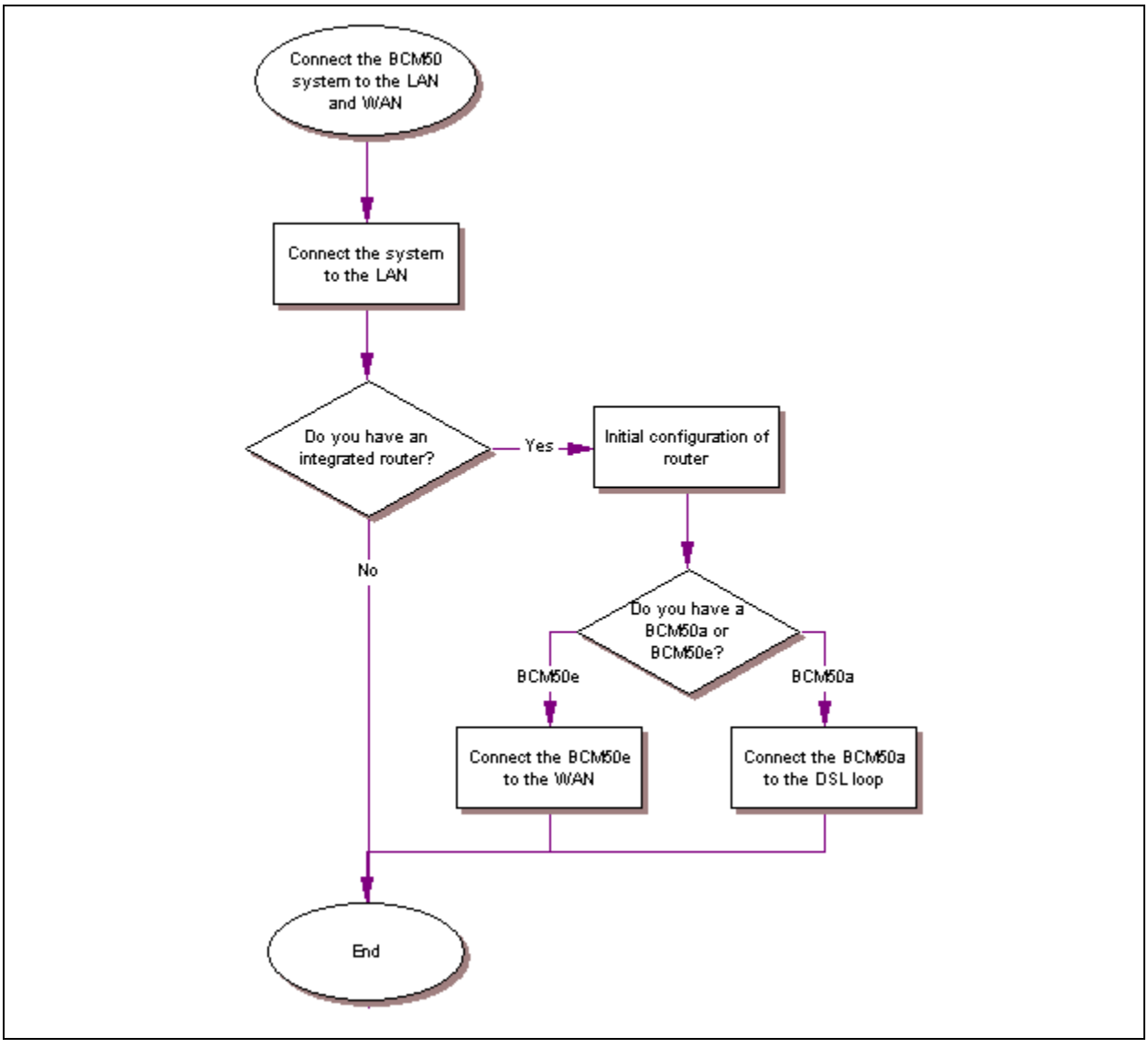
For information about backing up and restoring your system, see the *Avaya Business Communications Manager 6.0 Administration and Security*.

Chapter 17
Connecting the Avaya BCM50 system to the LAN and WAN

This section describes how to connect the LAN and WAN cables to the Avaya Business Communications Manager (Avaya BCM50) system.

The figure Overview of connecting data networking cables to the BCM50 system on page 155 shows the steps required to connect the data networking cables to the Avaya BCM50 system.

Figure 65 Overview of connecting data networking cables to the BCM50 system


Connect the BCM50 system to the LAN and WAN
Connect the system to the LAN
Do you have an integrated router?
Yes
Initial configuration of router
No
Do you have a BCM50a or BCM50e?
BCM50e
BCM50a
Connect the BCM50e to the WAN
Connect the BCM50a to the DSL loop
End

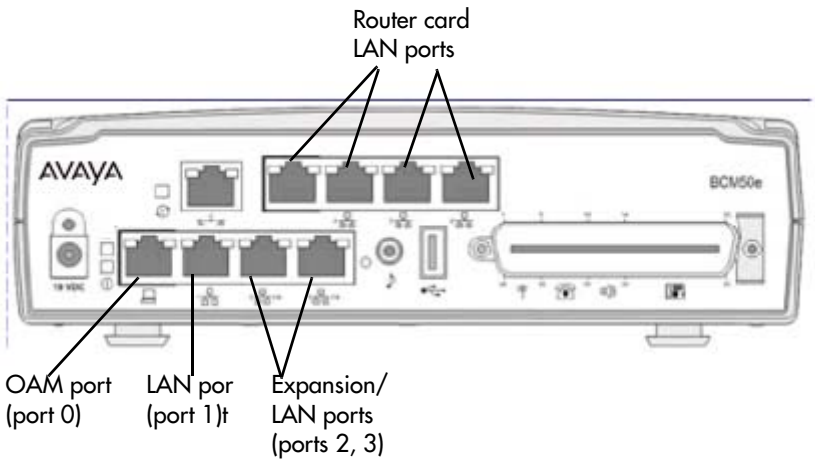
For information about connecting the cables to the Avaya BCM50 system:

- Connecting the Avaya BCM50 system to the LAN on page 156
- Connecting the Avaya BCM50 system to the WAN on page 157

Connecting the Avaya BCM50 system to the LAN

On BCM50 and BCM50b main units, three RJ-45 connectors support LAN connections and one OAM port. On the BCM50a, BCM50e, BCM50ba, and BCM50be main units, six RJ-45 connectors support LAN connections and one OAM port. The figure Ports on a BCM50e main unit on page 156 shows the location of the LAN ports.

Figure 66 Ports on a BCM50e main unit



Note: On units with an integrated ADSL modem, the WAN port is an RJ-11 port with additional LEDs.

The table LAN ports on the main unit on page 156 describes the function of each port.

Table 30 LAN ports on the main unit (Sheet 1 of 2)

Port name	Function
OAM port	The OAM port connects an on-site management computer to the main unit. Using this connection, you can access management tools, such as Business Element Manager, without affecting the main LAN. This port is not connected to the network switch built into the main unit and cannot be connected to other network devices.
LAN port	The LAN port connects the main unit to the LAN. This port connects to the network switch built into the main unit.

Table 30 LAN ports on the main unit (Sheet 2 of 2)

Port name	Function
Expansion/LAN ports	The expansion ports have two purposes: connecting the expansion units and providing LAN access to other network devices. If an expansion unit is connected to the port, the expansion port provides signaling channels, media channels, and LAN datagrams to the expansion unit. The expansion unit connects the signaling and media channels to the media bay module (MBM) and connects the LAN datagrams to the LAN port on the expansion unit. You can then use the LAN port on the expansion unit to connect network devices, such as IP telephones. If an expansion unit is not connected to the port, you can use the expansion port to connect network devices, such as IP Deskphones. The expansion ports connect to the network switch built into the main unit. Any devices connected to these ports are on the same subnet as the device connected to the LAN port.
Router card LAN ports	The router card LAN ports connect network devices, such as IP Deskpones to the LAN. These ports connect to the network switch built into the main unit. Any devices connected to these ports are on the same subnet as the device connected to the LAN port.
Expansion unit LAN port	The expansion unit LAN port connects network devices, such as IP Deskphones to the LAN. These ports are connected to the network switch built into the main unit. Any devices connected to these ports are on the same subnet as the device connected to the LAN port.

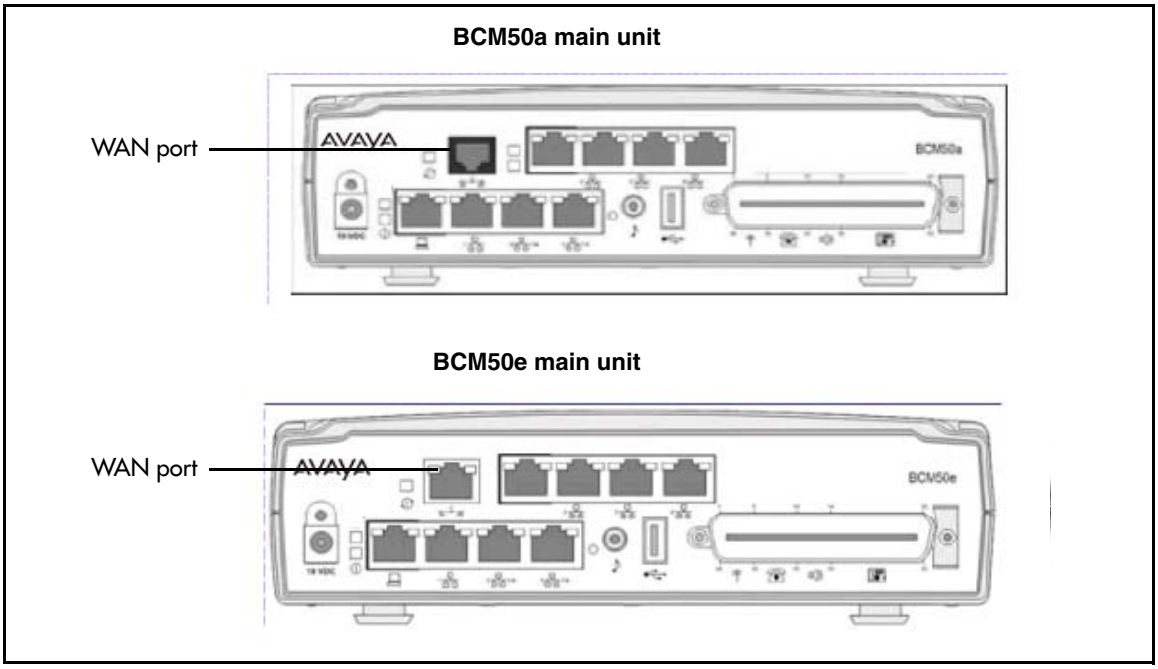
To connect the Avaya BCM50 system to the LAN

1. Connect one end of a standard Ethernet cable to your LAN.
2. Plug the other end of the Ethernet cable into the LAN port on the main unit.
3. To use the internal Avaya BCM50 network switch to connect another IP device to the LAN, connect an Ethernet cable between the IP device and one of the additional LAN ports on the BCM50 system (Router card LAN ports, Expansion port, or expansion unit LAN port).
4. Repeat step 3 for each IP device you want to connect to the LAN using the BCM50 switch.
5. If you install a BCM50a or BCM50e, proceed to Connecting the Avaya BCM50 system to the WAN on page 157.
   If you install a BCM50, proceed to Next step on page 159.

Connecting the Avaya BCM50 system to the WAN

Four types of main units contain a router card, the BCM50a, BCM50e, BCM50ba, and BCM50be. On the BCM50e and BCM50be, the WAN port is an RJ-45 port. On the BCM50a and BCM50ba, the WAN port is an RJ-11 port. The figure WAN port on a BCM50 main unit on page 158 shows the location of the WAN port on both types of router cards.

Figure 67 WAN port on a BCM50 main unit



For information about connecting the Avaya BCM50 to the WAN:

- To connect the BCM50e or BCM50be main units to the WAN on page 158
- To connect the BCM50a or BCM50ba main units to the WAN on page 158

To connect the BCM50e or BCM50be main units to the WAN

1. Use the Integrated Router Web GUI to configure the router card on the BCM50e and BCM50be main units. For information about how to configure the router, see the *BCM50e Integrated Router Configuration Guide*.
2. Connect one end of a standard Ethernet cable to your WAN edge device (for example, an external ADSL modem or cable modem).

   For proper setup and configuration of the device, see the documentation for your WAN edge device.
3. Plug the other end of the Ethernet cable into the WAN port.
4. Proceed to Next step on page 159.

To connect the BCM50a or BCM50ba main units to the WAN

1. Use the Integrated Router Web GUI to configure the router card on the BCM50a and BCM50ba main units. For information about how to configure the router, see the *BCM50a Integrated Router Configuration Guide*.
2. Make sure the power supply is connected to the main unit and to the AC power source (wall outlet).

Warning: Do not plug the WAN cable into the system unless the power supply is connected to the main unit and an AC power source with a third-wire ground.

3 Connect one end of a standard telephone cable to the ADSL telephone line provided by your ISP.

4 Plug the other end of the telephone cable into the WAN port.

Note: If you use the ADSL telephone line for both ADSL and regular voice communication, you must install a splitter filter. Your ADSL service provider supplies the splitter filter. Follow your service provider's instructions about connecting the splitter.

Next step

After you connect the cables to the Avaya BCM50 system, you can test the system. For information about testing the BCM50 system, see Testing basic Avaya BCM50 functionality on page 161.

Chapter 18
Testing basic Avaya BCM50 functionality

This section describes how to test the Avaya Business Communications Manager 50 (Avaya BCM50) system.

For information about testing and troubleshooting the Avaya BCM50 system:

- To test the main unit on page 161
- To troubleshoot the main unit on page 162
- To test the expansion unit on page 162
- To troubleshoot the expansion unit on page 162
- To test the MBM on page 163
- To test a station MBM on page 163
- To test a trunk MBM on page 163
- To determine why an MBM does not appear in Business Element Manager on page 164
- To determine why the ATA2 does not function on page 164
- To determine why there is no dial tone at the ATA2 on page 164
- To check the ATA2 wiring on page 165
- Reset to factory settings on page 165

To test the main unit

If you have the digital station feature included in your installed keycode, use the following test to ensure the main unit is operating properly:

1. Go to an extension that is connected to the RJ-21 telephony connector on the main unit.
2. Check for a dial tone.
3. Use this extension to make a call to another extension on the system.
4. If this system has an expansion unit with a media bay module (MBM) that supports extensions, repeat steps 3 and 4 for an extension connected to the expansion unit.
5. Go to an extension that has access to one of the lines on the main unit.
6. Select the line or line pool to which the line belongs.
7. Check for a dial tone.
8. Make a call using the line or line pool.
9. If this system has an expansion unit with an MBM that supports lines, repeat steps 6 to 8 with an extension that can access one of the lines connected to the expansion unit.

To troubleshoot the main unit

If a test fails, use the following procedure:

1. Verify that any nonfunctional feature is included in your installed keycode.
2. Check the wiring to the main unit and to the MBMs. Make sure that the cables are properly seated and are connected to the correct ports.
3. Reboot the Avaya BCM50 system.
4. Check LEDs (see Viewing the Avaya BCM50 system LEDs on page 55).
5. Use Business Element Manager or the Telset Administration feature to check the programming for the lines or extensions that failed the call test.
6. If the programming is incorrect, use the Backup and Restore Utility to load a recent backup of system programming. If a recent backup is not available, correct the programming using Business Element Manager or the Telephone Administration feature.

To test the expansion unit

Use the following test to ensure the expansion unit is operating properly:

1. Make sure that the Avaya BCM50 system is fully booted. For indications that the system is fully operational, see Viewing the Avaya BCM50 system LEDs on page 55.
2. Check the power and status LEDs on the MBM that is inserted in the expansion unit. Both LEDs must be solid green. If either LED is not solid green, a problem exists with the MBM or the expansion unit. For a detailed description of the LED states, see Viewing the Avaya BCM50 system LEDs on page 55.
3. If the expansion unit has an MBM that supports extensions, go to an extension that is connected to the MBM.
4. Check for a dial tone.
5. Use this extension to make a call to another extension on the system.
6. If the expansion unit has an MBM that supports lines, go to an extension that has access to one of the lines on the MBM.
7. Select the line or line pool to which the line belongs.
8. Check for a dial tone.
9. Make a call using the line or line pool.

To troubleshoot the expansion unit

1. Check that the correct feature for the expansion unit is included in your installed keycode.
2. Check that the expansion port is connected to the proper connector. For location of the LAN ports, see the figure Expansion ports on page 100 and the figure Connecting the expansion unit to the BCM50 main unit on page 101.

3 Check the wiring to the MBM. Make sure that the cables are properly seated and are connected to the correct ports with proper LED indications.

4 Check that the switches on the MBM are all set to on. For more information about these switches, see Verifying the media bay module switch settings on page 93.
If the MBM is a GASM or GATM, all the switches on the right are not on. For information about setting these switches, see Verifying the media bay module switch settings on page 93.

To check the MBM switches, you must remove the MBM from the expansion unit. For instructions, see Replacing a media bay module on page 185.

5 Perform a firmware download to ensure that the correct version is loaded on the ASM/GASM or GATM unit.

6 Use Business Element Manager or Telset Admin to check the programming for the lines or extensions connected to the MBM.

7 Reboot the system to ensure that the Avaya BCM50 main unit functions correctly.

8 If the programming is incorrect, use the Backup and Restore Utility to load a recent backup of system programming. If a recent backup is not available, correct the programming using Business Element Manager or the Telephone Administration feature.

To test the MBM

1 Check the Power and Status LEDs on the MBM. Both LEDs must be solid green. If either LED is not solid green, a problem exists with the MBM. For a detailed description of the LED states, see Media bay module LEDs (expansion units only) on page 61.

2 Perform a call test to make sure the new MBM functions correctly. If you replaced a station MBM, use To test a station MBM on page 163. If you replaced a trunk MBM, use To test a trunk MBM on page 163. If you replaced a 4x16 MBM, use To test a station MBM on page 163 and To test a trunk MBM on page 163.

To test a station MBM

1 Go to an extension on the MBM.

2 Check for a dial tone.

3 Use this extension to make a call to another extension on the system.

4 Use this extension to make a call to an external telephone number.

To test a trunk MBM

1 Go to an extension that has access to one of the lines on the MBM.

2 Select the line or line pool to which the line belongs.

3 Check for a dial tone.

4 Make a call using the line or line pool.

To determine why an MBM does not appear in Business Element Manager

1. Check that the correct feature for the expansion unit is included in your installed keycode.
2. Check that both the Power and Status LEDs on the MBM are solid green.
   - If the Power LED is off, check that the power supply cable is properly seated in the expansion unit and the power supply is connected to a working power outlet.
     Also check that the MBM is properly seated in the expansion unit.
   - If the Status LED is not solid green, check that the Expansion cable is properly seated in the Expansion port on the expansion unit and on the main unit.
3. Check that the MBM and expansion unit are enabled using either Business Element Manager or Telset Administration. If the units are enabled, disable them, and then re-enable them.
4. Check that all the switches on the MBM are on. For more information about these switches, see Verifying the media bay module switch settings on page 93.
   If the MBM is a GASM or GATM, all the switches on the right are not set to on. For information about setting these switches, see Verifying the media bay module switch settings on page 93.

   To check the MBM switches, you must remove the MBM from the expansion unit. For instructions, see Replacing a media bay module on page 185.

To determine why the ATA2 does not function

1. Check for a dial tone using an analog device.
2. Check that AC power is connected to the ATA2 unit.
3. Check that the correct feature for digital sets is included in your installed keycode.
4. Verify that the ATA2 is connected to a digital station port.
5. Allow sufficient startup time (30–60 sec).
6. Plug an analog device into the phone port of the ATA2 and check for a dial-tone.

To determine why there is no dial tone at the ATA2

1. If you hear no dial tone, replace a single-line telephone for the data communication device.
2. If you hear no dial tone at the ATA2 unit:
   a. Disconnect the line side of the ATA2. Connect a digital telephone to the ATA2 port.
   b. Check that the connection from the ATA2 to the Avaya BCM50 hardware works correctly.

To check the ATA2 wiring

1 Use an analog phone to test the ATA2.

2 Check the following connections:

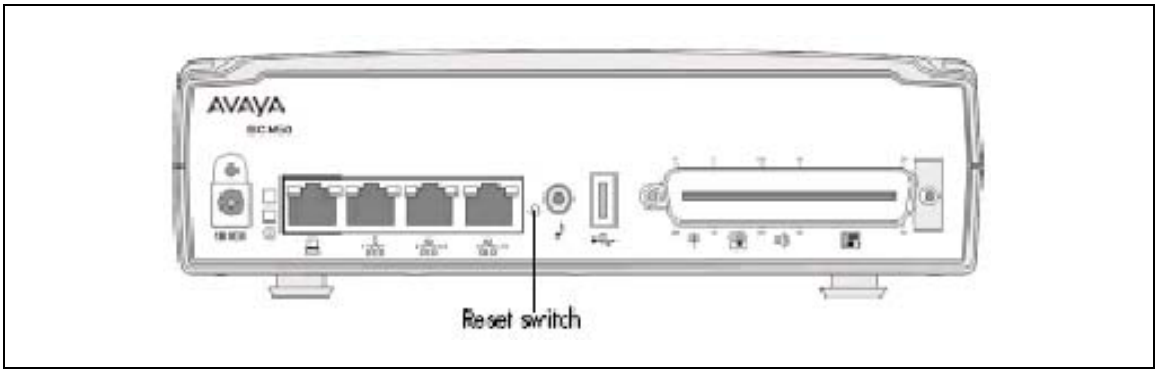
a ATA2 to the terminal
The resistance must be 200 ohms or less for data applications and 1300 ohms or less for voice applications.

b Avaya BCM50 hardware to the ATA2
The wiring must be equivalent to 800 m of 0.5 mm wire (2600 ft. of 24-AWG) or less. Do not use bridge taps and loading coils between the BCM50 hardware and ATA2.

Reset to factory settings

This section describes how to reset the Avaya BCM50 system to the factory settings or a stable working condition using the reset switch (see the figure Reset switch location on page 165). When the BCM50 is in this condition, you can make further modifications.

Figure 68 Reset switch location



Some possible situations in which you use the reset feature are:

- If the BCM50 system is configured incorrectly to an extent that it is no longer functional. The customer must use a level 1 reset to return to the default system programming and restore a previous configuration or reconfigure the system.
- If distributors want to reuse BCM50 systems, they must first erase all customer-specific data using a level 1 or level 2 reset.

Reset levels

Reset to factory settings is a stand-alone feature that has the following levels of reset:

- **Configuration Reset (previously known as Level 1)** reset erases all customer-specific data and restores the default configuration for all components. This reset leaves the software components untouched. That is, the system has the latest release and patch level of the software installed. Only the system and user configuration data is erased and replaced with default values. For the Avaya BCM50, no Ethernet connectivity to the system occurs during this operation.
- **Software Reset (previously known as Level 2)** reset erases all customer and system configuration data and all software releases and patches. This reset reinstalls the original factory configuration settings. For Avaya BCM50, a Software reset also resets the router firmware to what was shipped from the factory. No Ethernet connectivity to the system occurs during this operation.

Warning: If you perform a software reset to solve an undetermined problem and still have access to Business Element Manager, you must retrieve all the log files for technical support before performing the software reset. A software reset erases all log files from the system.

Command Line Interface

You can use the Command Line Interface (CLI) to configure basic settings, as well as shut down, reboot, or reset the BCM50 system. Two CLI modes are available: Maintenance CLI, and Configuration CLI.

This section contains information about the following topics:

- Accessing the CLI through the OAM port on page 166
- Using the Configuration CLI on page 167
- Using the Maintenance CLI on page 167

Accessing the CLI through the OAM port

You can access the CLI through the OAM port. Your user account must be assigned the System-CLI privilege before you can access the CLI.

Caution: The CLI is intended for use by experienced technicians, or as directed by Avaya Technical Support. Improper use of the CLI may result in data loss.

1. Connect an Ethernet cable from the Ethernet port on a PC to the OAM Ethernet port on the Avaya BCM50.
2. Set the IP address of the PC to 10.10.11.2.
3. Use putty to establish an SSH connection to the default IP address of the OAM port: 10.10.11.1.

4 Log into the BCM50 by entering your username and password. Your user account must be assigned the System-CLI privilege in order to access the CLI.

Using the Configuration CLI

The Configuration CLI displays when the system is in Main OS mode. The options available on the Configuration CLI are:

- **0—Exit.** The system exits the CLI to the login prompt.
- **1—Reboot.** The system reboots to the Main OS.
- **2—Shutdown.** The system shuts down. You need physical access to the Avaya BCM50 hardware to restart the system.
- **3—Safe OS.** The system reboots to the Safe OS and waits 1 minute for you to login. When you login within 1 minute, the Maintenance CLI displays. If you do not login within 1 minute, the system changes to the Main OS. For more information about the Safe OS, see Using the Maintenance CLI on page 167.
- **4—Configuration Reset.** A Level 1 reset occurs. The system resets all configuration data to the factory defaults.
- **5—Software Reset.** A Level 2 reset occurs. The system resets all configuration data and software to the factory defaults.
- **6—IP Configuration.** You can configure the following basic IP settings:
  - 0—Return to Previous Menu. The system returns to the main menu.
  - 1—Hostname. Provision the hostname of the system.
  - 2—IP Address. Provision the IP address of the system.
  - 3—Subnet Mask. Provision the subnet mask for the IP address.
  - 4—Default Gateway. Provision the default gateway for the system.
  - 5—DHCP Client Mode. Enable or disable the DHCP client.
  - 6—Commit Changes. Save changes to the IP settings.
  - 7—Reload Settings. Reload the existing IP settings.

Using the Maintenance CLI

The Maintenance CLI displays when the system is in Safe OS mode. The Safe OS is a diagnostic mode that you can use if the Main OS is experiencing problems. No applications or telephony services are running when the Avaya BCM50 is in Safe OS mode. The options available on the Maintenance CLI are:

- **0—Exit.** The system exits to the Safe OS login prompt.
- **1—Reboot into Main OS.** The system reboots to the Main OS.
- **2—Shutdown.** The system shuts down. You need physical access to the BCM50 hardware to restart the system.
- **3—Reboot into Safe OS.** The system reboots to the Safe OS and waits 1 minute for you to login. If you do not login within 1 minute, the system changes to the Main OS.

- **4—Transition to Main OS.** The system changes from the Safe OS to the Main OS without restarting.
- **5—Configuration Reset.** A Level 1 reset occurs. The system resets all configuration data to the factory defaults.
- **6—Software Reset.** A Level 2 reset occurs. The system resets all configuration data and software to the factory defaults.
-

To perform a Level 1 reset (configuration reset)

1. Access the CLI. For more information about how to access the CLI, see Command Line Interface on page 166.
2. From the Configuration CLI, select option 4—Configuration Reset. If you are using the Maintenance CLI, select option 5—Configuration Reset.
3. The LEDs progress through the start-up and shut down sequence. This process can take more than 2 minutes.
4. A Status LED that is flashing yellow, and a Power LED that is solid red, indicates that a configuration reset is in progress. This process can take more than 2 minutes.
5. The system restarts to the Main OS. This process can take more than 2 minutes.

To perform a Level 2 reset (software reset)

1. Access the CLI. For more information about how to access the CLI, refer to Command Line Interface on page 166.
2. From the Configuration CLI, select option 5—Software Reset. If you are using the Maintenance CLI, select option 6—Software Reset.
3. The LEDs will progress through the start-up and shut down sequence. This process can take more than 2 minutes.
4. A Status LED that is flashing yellow, and a Power LED that is solid red, indicates that a software reset is in progress. This process can take more than 5 minutes.

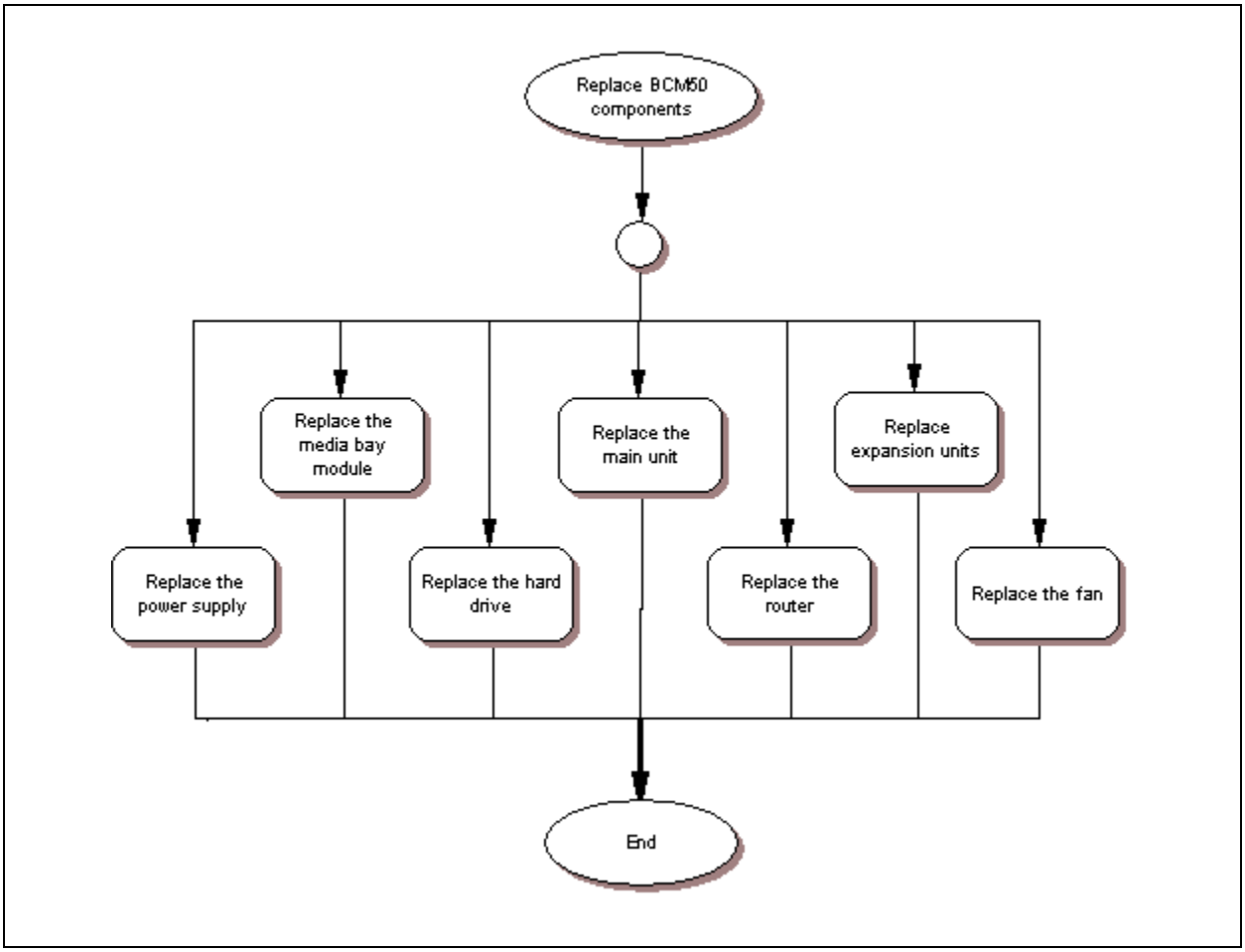
   The system restarts to the Main OS. This process can take more than 2 minutes.

Chapter 19
Replacing the Avaya BCM50 system components

This section provides an overview of how to replace the Avaya Business Communications Manager (Avaya BCM50) system components. The figure Overview of replacing the BCM50 system components on page 171 shows the steps required to replace the Avaya BCM50 system components.

This section also describes common procedures required to prepare the system for maintenance.

Figure 69 Overview of replacing the BCM50 system components



For information about replacing the Avaya BCM50 components:

- Replacing a power supply on page 175
- Replacing a main unit on page 179
- Replacing a media bay module on page 185
- Replacing an expansion unit on page 189
- Replacing an internal component on page 195

Preparing the system for maintenance

Use the following procedure to prepare the system for maintenance. This procedure is referenced throughout the maintenance portion of this document:

To shut down the system

1. Check for a recent backup of the Avaya BCM50 system programming.
2. If no recent backup is available, then use Business Element Manager to back up the system data. For information about backing up the system data, see the *Administration Guide*.
3. In Business Element Manager, from the **Administration** tab, click the **Utilities** folder to expand it.
4. From the Utilities folder, select **Reset**.
5. Click **Reboot** to reboot the system.

   The BCM50 system begins the shutdown process.
6. Unplug the main unit when the status and power LEDs change from solid green to flashing orange.

Restarting the system after maintenance

When you finish your maintenance procedure, restart the Avaya BCM system in the order described in this section.

To return the system to operation

1. Check the Power and Status LEDs on the main unit. After the Avaya BCM50 starts, both LEDs must be solid green. If either LED is not solid green, a problem with the main unit exists. For a detailed description of the LED states, see System status LEDs on page 55.
2. If this system has an expansion unit, check the Power and Status LEDs on the media bay module (MBM) in the expansion unit. Both LEDs must be solid green. If either LED is not solid green, a problem exists with the MBM or the expansion unit. For a detailed description of the LED states, see Media bay module LEDs (expansion units only) on page 61.
3. If this system has a second expansion unit, check the Power and Status LEDs on the second MBM.
4. Use Business Element Manager to restore the programming. For information about restoring system programming, see *Avaya Business Communications Manager 6.0 Administration and Security*.
5. Set the basic configuration parameters. For more information, see Configuring the Avaya BCM50 system on page 123.

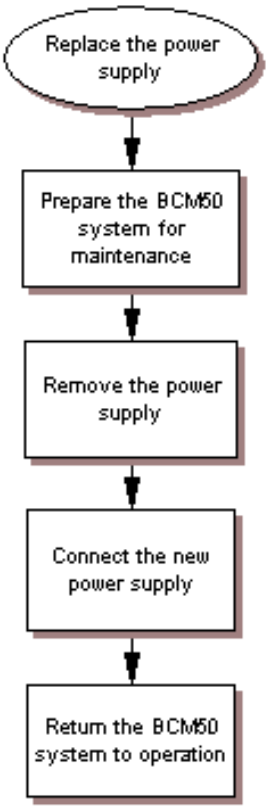
Warning: When you restart the system, all digital telephony, IP client voice mail, and VoIP ports are not available until the system services restart.

Chapter 20
Replacing a power supply

This chapter describes the procedure for replacing a power supply.

The figure Overview of replacing the Avaya Business Communications Manager 50 (Avaya BCM50) power supply on page 175 shows an overview of replacing a power supply.

Figure 70 Overview of replacing the Avaya Business Communications Manager 50 (Avaya BCM50) power supply


Replace the power supply
Prepare the BCM50 system for maintenance
Remove the power supply
Connect the new power supply
Return the BCM50 system to operation

For information about replacing a power supply:

- Preparing the system for maintenance on page 176
- Removing the power supply on page 176
- Connect the new power supply on page 176

Preparing the system for maintenance

In most cases, if the power supply for the main unit is faulty, the system is already shut down. If this is the case, proceed to Removing the power supply on page 176. If you replace the expansion unit power supply, or if the system is still operating, perform the procedure To shut down the system on page 172.

Removing the power supply

Before you disconnect the power supply, read the warnings about connecting network lines in Wiring warnings on page 105.

To remove the power supply

1. Remove the telephony and data networking lines from the Avaya BCM50 units. These lines include:
   - the RJ-21 telephony connector on the main unit
   - the ADSL line in the WAN port on a BCM50a main unit
   - any analog telephone lines in the media bay modules (MBM) in the expansion units
   - any digital telephone lines in the MBMs in the expansion units
2. Rotate the power supply retention clip to free the power supply cord.
3. Remove the power supply cord from the BCM50 unit.



Warning: Leakage currents

You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

4. Remove the power supply cord from the AC wall outlet.
   If your system has a UPS, remove the power supply cord from the UPS socket.
5. Remove the power supply from the table, rack-mount shelf, or wall-mount bracket.
6. Proceed to Connect the new power supply on page 176.

Connect the new power supply

Before you connect the power supply, read the warnings about connecting network lines in Wiring warnings on page 105.

To connect the new power supply

1 Connect the new power supply. See Connecting the power supply on page 102.

2 Connect the telephony and data networking lines that you removed in Step 1 of Removing the power supply on page 176.

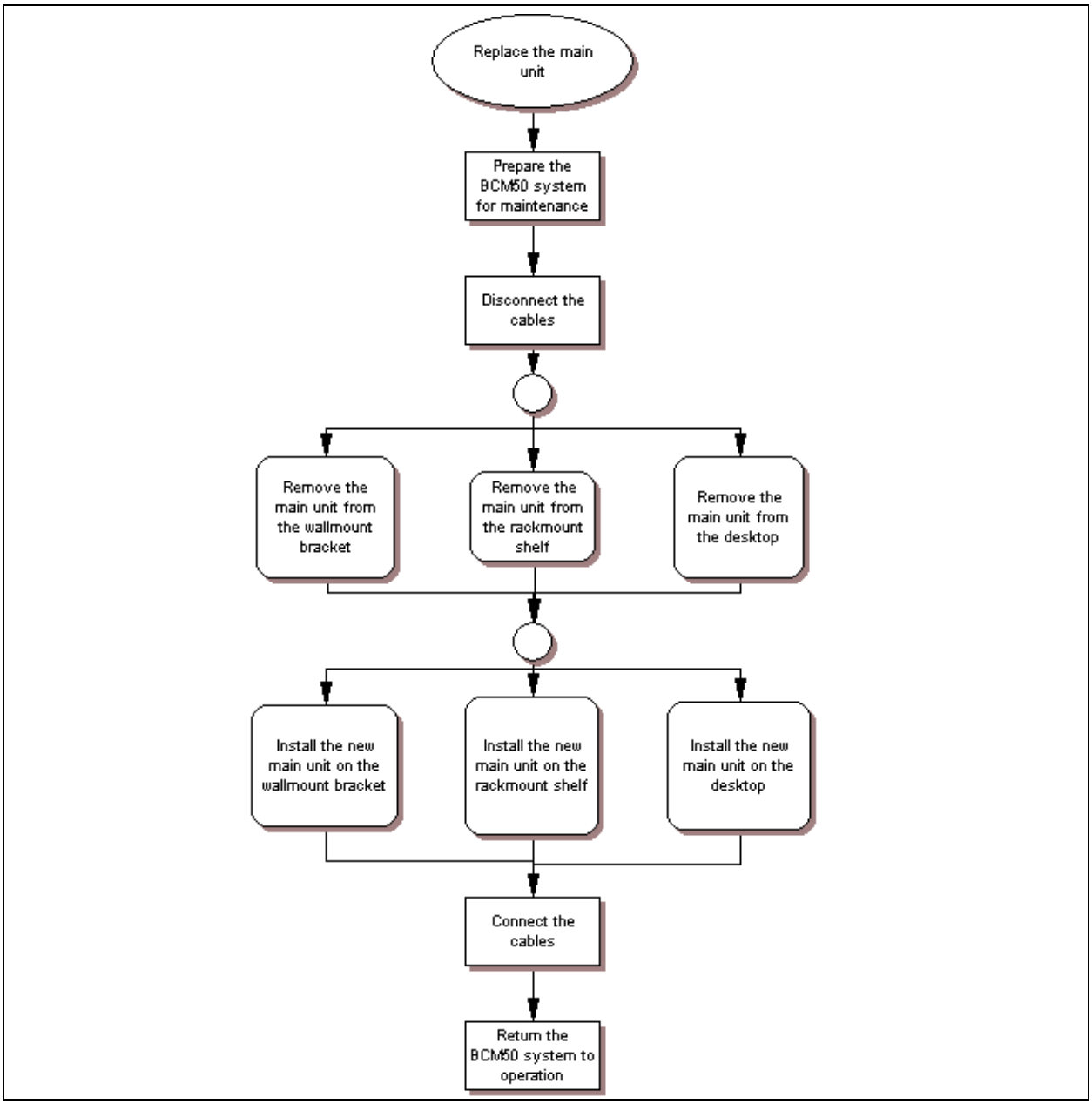
3 Continue with the procedure To return the system to operation on page 172.

Chapter 21
Replacing a main unit

Three types of main units are available: the Avaya Business Communications Manager 50 (Avaya BCM50), the Avaya BCM50a, and the BCM50e. This chapter describes the procedure for replacing a main unit.

The figure Overview of replacing a main unit on page 180 shows an overview of replacing a main unit.

Figure 71 Overview of replacing a main unit


Replace the main unit
Prepare the BCM50 system for maintenance
Disconnect the cables
Remove the main unit from the wallmount bracket
Remove the main unit from the rackmount shelf
Remove the main unit from the desktop
Install the new main unit on the wallmount bracket
Install the new main unit on the rackmount shelf
Install the new main unit on the desktop
Connect the cables
Return the BCM50 system to operation

For information about replacing the Avaya BCM50 main unit:

- Preparing the system for maintenance on page 181
- Removing the main unit on page 181
- Installing the new main unit on page 182

Preparing the system for maintenance

In most cases, if the Avaya BCM50 main unit is faulty, the system is already shut down. If this is the case, continue with the procedure To disconnect the cables on page 181. If the system is still operating, perform the procedure To shut down the system on page 172.

To disconnect the cables

1. Remove the 25-pair cable from the RJ-21 telephony connector on the front of the main unit.
2. Remove the Ethernet cable from the LAN port.
3. If the main unit is a Avaya BCM50a or a Avaya BCM50e, remove the Ethernet cable or ADSL line from the WAN port and the Ethernet cables from the Router card LAN ports.
4. Remove the expansion cables or LAN cables from the expansion ports on the main unit. For the expansion cables, make sure you mark the cables with the number of the port to which they connect.
5. If the system uses the external Music Source port, remove the cable from the Music Source port.
6. If the system uses a UPS, remove the USB cable from the USB port.
7. Rotate the power supply retention clip to free the power supply cord.
8. Remove the power supply cord from the main unit.



Warning: Leakage currents

You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

9. Proceed to Removing the main unit on page 181.

Removing the main unit

The method you use to remove the main unit depends on how the unit is mounted. Use one of the following procedures to remove the main unit:

- To remove a rack-mounted main unit on page 182
- To remove a wall-mounted main unit on page 182
- To remove a desktop mounted main unit on page 182

To remove a rack-mounted main unit

1. Ensure you remove all the cables from the main unit.
   If necessary, see the procedure To disconnect the cables on page 181.
2. If a unit is mounted to the top of the main unit, slide that unit forward until it disengages from the clips on the main unit. Lift the unit off of the top of the main unit.
3. If the main unit is secured to the rack-mount shelf with screws, remove these screws from the bottom of the rack-mount shelf.
4. Slide the main unit forward until it disengages from the clips on the rack-mount shelf.
5. Lift the main unit off of the rack-mount shelf and set it on a flat, clean, static-free surface.
6. Proceed to Installing the new main unit on page 182.

To remove a wall-mounted main unit

1. Ensure you remove all the cables from the main unit.
   If necessary, see the procedure To disconnect the cables on page 181.
2. Lift the main unit until it disengages from the clips on the wall-mount bracket.
3. Pull the main unit out and away from the wall-mount bracket.
4. Set the main unit on a flat, clean, static-free surface.
5. Proceed to Installing the Avaya BCM50 unit on the wall on page 82.

To remove a desktop mounted main unit

1. Ensure you remove all the cables from the main unit.
   If necessary, see the procedure To disconnect the cables on page 181.
2. If a unit is mounted to the top of the main unit, slide that unit forward until it disengages from the clips on the main unit. Lift the unit off of the top of the main unit.
3. Lift the main unit off of the table and set it on a flat, clean, static-free surface.
4. Continue with the procedure To install the Avaya BCM50 unit on a desktop or shelf on page 87.

Installing the new main unit

Use one of the following procedures to install the new Avaya BCM50 main unit:

- Installing the Avaya BCM50 unit on the rack-mount shelf on page 80
- To install the Avaya BCM50 unit on the wall-mount bracket on page 84
- To install the Avaya BCM50 unit on a desktop or shelf on page 87

After you install the new BCM50 main unit, proceed to the procedure To connect the cables on page 183.

To connect the cables

1. Insert the power supply retention clip into the new main unit.
2. Rotate the power supply retention clip so that the power supply jack is clear.
3. Connect the power supply cord to the main unit.
4. Rotate the power supply retention clip to lock the power supply cord in place.
5. Connect to AC power source:
   - **a** If the system has a UPS, connect the USB cable to the USB port on the main unit and plug the UPS power cord into the AC power source (wall outlet).
   - **b** If the system has no UPS, plug the power supply cable into the AC power source (wall outlet).
6. If the system uses the external Music Source port, connect the music source cable to the Music Source port on the main unit.
7. Connect the expansion cables or LAN cables to the expansion ports on the main unit. For expansion cables, make sure you connect the cables to the expansion ports from which you removed them to ensure the same line and extension numbering.
8. If the main unit is an Avaya BCM50a or Avaya BCM50e, connect the Ethernet cable or ADSL line to the WAN port and the Ethernet cables to the Router card LAN ports.

> **Warning: Leakage currents**
>
> You must connect the power cord to a grounded outlet before connecting the telephony and data networking cables to the system.

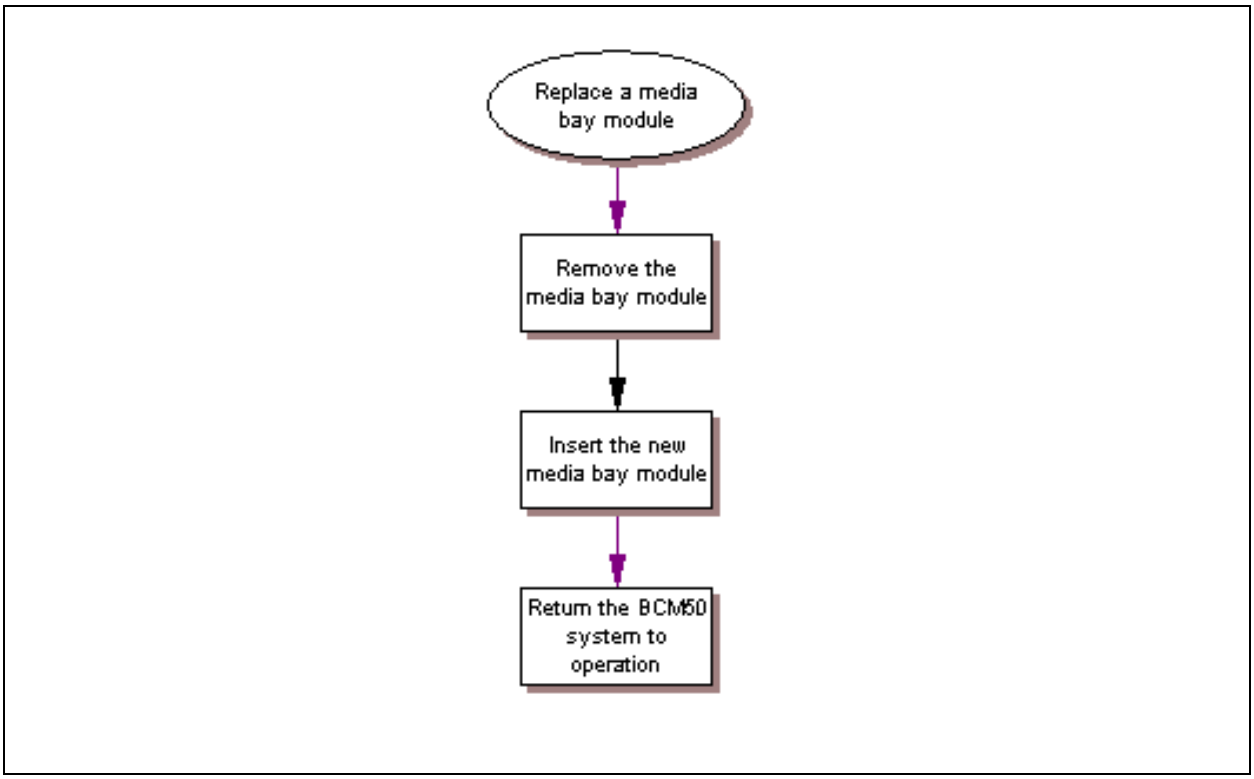
9. Connect the Ethernet cable to the LAN port.
10. Connect the 25-pair cable to the RJ-21 telephony connector on the front of the main unit.
11. Secure the RJ-21 connector to the BCM50 main unit.
    If you use a straight RJ-21 connector, use the two screws on the sides of the connector to secure it.
    If you use a right-angle RJ-21 connector, use the screw on the left side of the connector to secure the left side of the connector. To secure the right side of the connector, use a cable tie to fasten the 25-pair cable to the anchor on the BCM50 main unit.
12. Continue with the procedure To return the system to operation on page 172.

Chapter 22
Replacing a media bay module

This chapter describes the procedure for replacing a media bay module (MBM).

The figure Overview of replacing an MBM on page 185 shows an overview of replacing the MBM.

Figure 72 Overview of replacing an MBM


Replace a media bay module
Remove the media bay module
Insert the new media bay module
Return the BCM50 system to operation

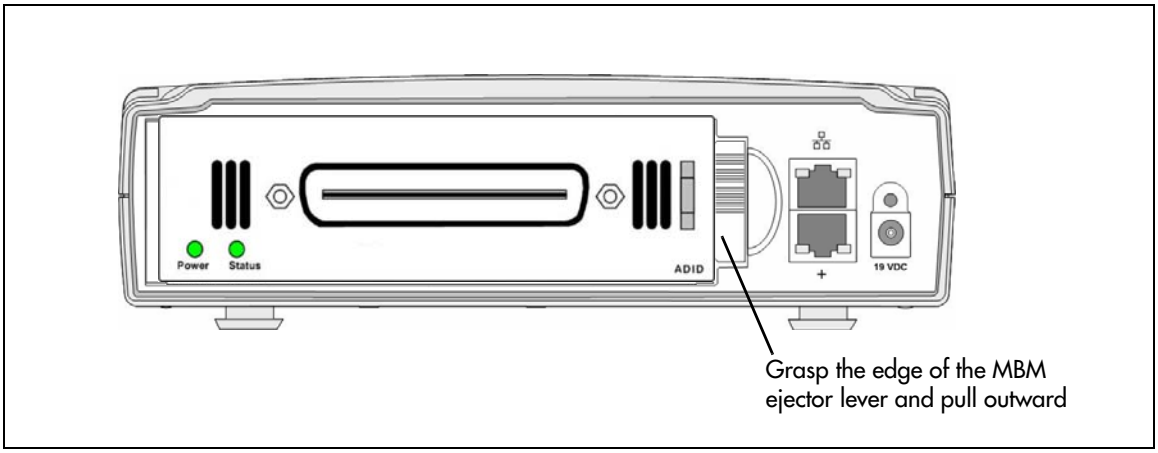
See the following procedures to replace an MBM:

- To remove the MBM on page 186
- To insert the new MBM on page 187

To remove the MBM

1. Use Business Element Manager to disable the MBM. For more information about disabling an MBM, see the *Administration Guide*.
2. If the expansion unit is wall-mounted, it must be removed from the wall-mount bracket before you remove the MBM. For more information, see the procedure To remove a wall-mounted expansion unit on page 191, and then proceed to step 7.
3. Disconnect all of the telephone line and extension cables from the MBM.
   If more than one cable exists, mark the cables to identify the port from which you removed them.
4. Rotate the power supply retention clip to free the power supply cord.
5. Remove the power supply cord from the expansion unit.
6. Attach one end of the grounding strap to your wrist and the other end to a grounded metal surface.
7. Pull out the ejector lever with your index finger. Then grasp the ejector lever with your thumb and index finger and pull outward to disengage the MBM. See the figure Remove an MBM on page 186. Finish removing the MBM by hand.

Figure 73 Remove an MBM



8. Grasp the top and bottom edges of the MBM. Remove the MBM from the expansion unit. Place the MBM on a flat, clean, static-free surface.

> **Warning:** Protect the hardware components against damage from electrostatic discharge. Always wear a ground wrist strap before you handle components. Always place the components in a static-free container.

9. Continue with the procedure To insert the new MBM on page 187.

To insert the new MBM

1 Unpack the new MBM.

2 Verify that all dip switches are in the factory default positions. See Verifying the media bay module switch settings on page 93.

3 Install the MBM. See Installing a media bay module in an expansion unit on page 97.

4 If the new MBM is a different type of module (for example, you replaced a DSM16 with a 4x16), use Element Manager to configure the new MBM before continuing. For more information about configuring the MBM, see the procedure To configure the MBM(s) on page 153.

5 Reconnect the power supply cable. See the procedure To connect a power supply without a UPS on page 103.

6 Connect the telephone line and extension cables to the port on the front of the new MBM. See Connecting the lines and extensions on page 104.

   If the new MBM is a different type of module (for example, you replaced a DSM16 with a 4x16), you must make any additional connections to the MBM before continuing.

7 Proceed to the procedure To test the MBM on page 163.

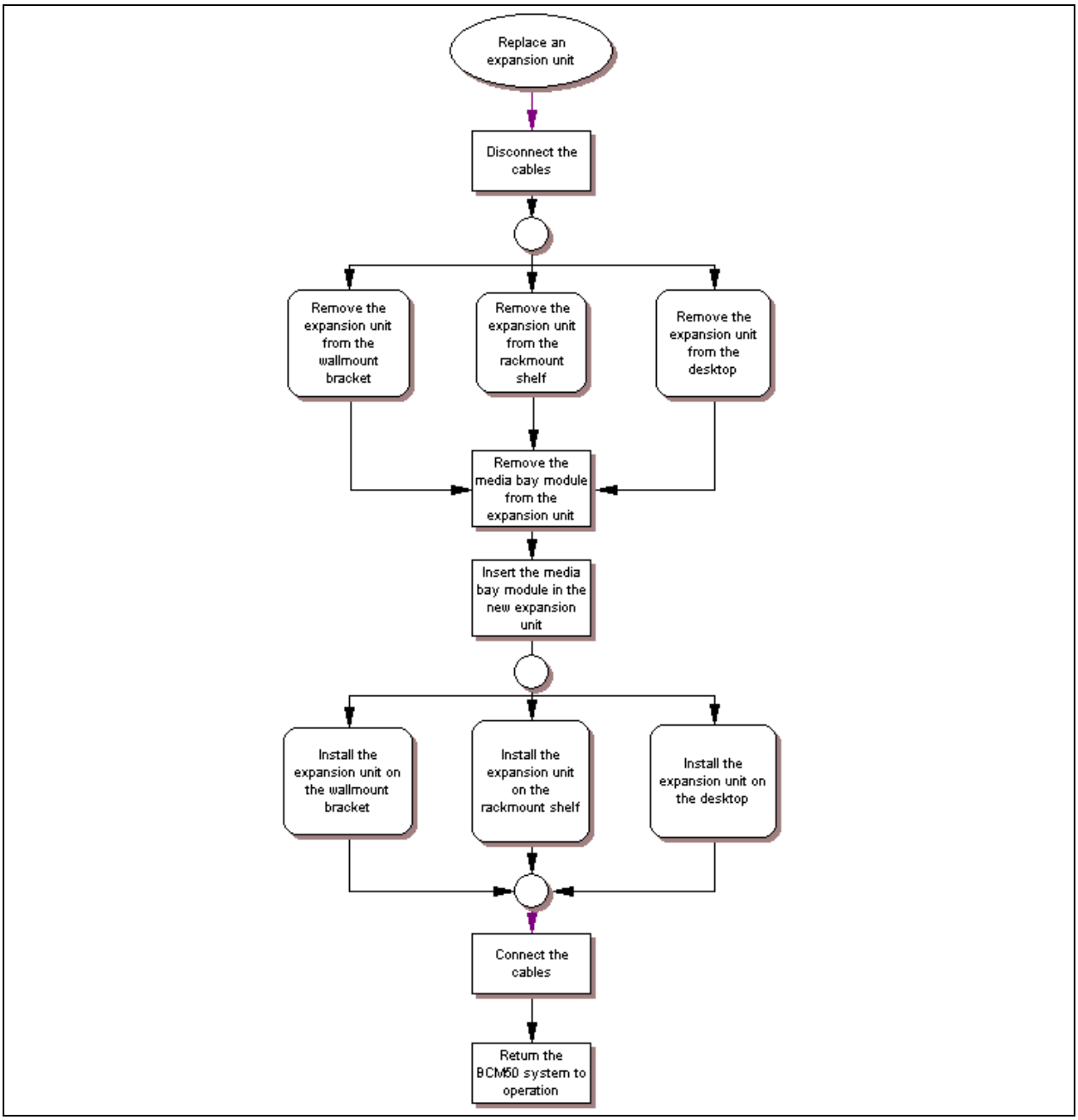
8 Continue with the procedure To return the system to operation on page 172.

Chapter 23
Replacing an expansion unit

This chapter describes the procedure for replacing an expansion unit.

The figure Overview of replacing an expansion unit on page 189 shows an overview of replacing an expansion unit.

Figure 74 Overview of replacing an expansion unit


Replace an expansion unit
Disconnect the cables
Remove the expansion unit from the wallmount bracket
Remove the expansion unit from the rackmount shelf
Remove the expansion unit from the desktop
Remove the media bay module from the expansion unit
Insert the media bay module in the new expansion unit
Install the expansion unit on the wallmount bracket
Install the expansion unit on the rackmount shelf
Install the expansion unit on the desktop
Connect the cables
Return the BCM50 system to operation

For information about replacing an expansion unit:

- Disconnecting the cables on page 190
- Removing the expansion unit on page 190
- Removing the MBM on page 192
- Inserting the MBM in the new expansion unit on page 192
- Installing the new expansion unit on page 193

Disconnecting the cables

Use the following procedure to disconnect the expansion unit from the other equipment.

To disconnect the expansion unit cables

1. Use Business Element Manager to disable the media bay module (MBM) that is installed in the expansion unit. For more information, see the *Avaya Business Communications Manager 6.0 Administration and Security*.
2. Disconnect the expansion cable from the expansion port on the expansion unit.
3. Disconnect the LAN cable from the LAN port on the expansion unit.
4. Disconnect all of the telephone lines and extension cables from the MBM inserted in the expansion unit.
   If more than one cable exists, mark the cables to identify the port from which you removed them.
5. Rotate the power supply retention clip to free the power supply cord.
6. Remove the power supply cord from the expansion unit.

> **Warning: Leakage currents**
>
> You must disconnect the telephony and data networking cables from the system before disconnecting the power cord from a grounded outlet.

7. Proceed to Removing the expansion unit on page 190.

Removing the expansion unit

How you remove the expansion unit depends on how the unit is mounted. Use one of the following procedures to remove the expansion unit:

- To remove a rack-mounted expansion unit on page 191
- To remove a wall-mounted expansion unit on page 191
- To remove a desktop-mounted expansion unit on page 191

To remove a rack-mounted expansion unit

1. Ensure you remove all the cables from the expansion unit.
   If necessary, see the procedure To disconnect the expansion unit cables on page 190.
2. If a unit is mounted to the top of the expansion unit, slide that unit forward until it disengages from the clips on the expansion unit. Lift the unit off the top of the expansion unit.
3. If the expansion unit is mounted on top of another unit, slide the expansion unit forward until it disengages from the clips of the other unit. Go to step 6.
   If the expansion unit is not mounted on top of another unit, continue to the next step.
4. If the expansion unit is secured to the rack-mount shelf with screws, remove these screws from the bottom of the rack-mount shelf.
5. Slide the expansion unit forward until is disengages from the clips on the rack-mount shelf.
6. Lift the expansion unit off of the rack-mount shelf or other unit and set it on a flat, clean, static-free surface.
7. Continue with the procedure To remove the MBM on page 186.

To remove a wall-mounted expansion unit

1. Ensure you remove all the cables from the expansion unit.
   If necessary, see the procedure To disconnect the expansion unit cables on page 190.
2. Lift the expansion unit until it disengages from the clips on the wall-mount bracket.
3. Pull out the expansion unit and move it away from the wall-mount bracket.
4. Set the expansion unit on a flat, clean, static-free surface.
5. Proceed to Removing the MBM on page 192.

To remove a desktop-mounted expansion unit

1. Ensure you remove all the cables from the expansion unit.
   If necessary, see the procedure To disconnect the expansion unit cables on page 190.
2. If a unit is mounted to the top of the expansion unit, slide that unit forward until it disengages from the clips on the expansion unit. Lift the unit off the top of the expansion unit and set it on a flat, clean, static-free surface.
3. If the expansion unit is mounted on top of another unit, slide the expansion unit forward until it disengages from the clips of the other unit.
4. Lift the expansion unit off of the table or other unit and set it on a flat, clean, static-free surface.
5. Proceed to Removing the MBM on page 192.

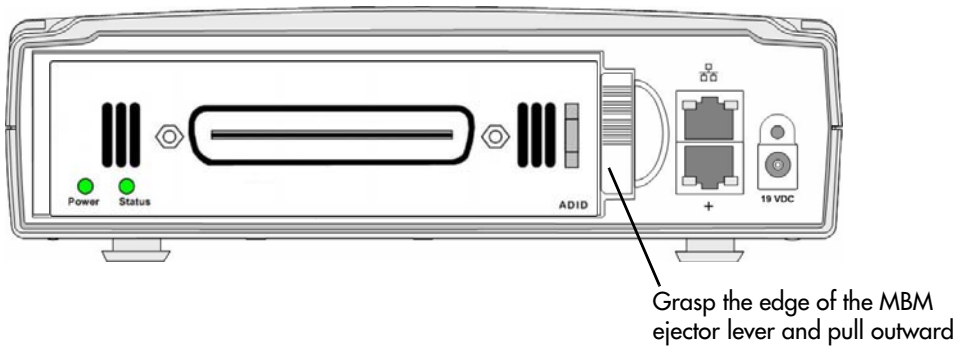
Removing the MBM

After you remove the expansion unit, use the following procedure to remove the MBM from the expansion unit.

To remove the MBM

1. Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.
2. Grasp the right edge of the MBM ejector lever with your thumb, index, and middle fingers. Pull outward to partially eject the MBM. Pull further on the lever to eject the MBM from the expansion unit. See the figure Remove an MBM on page 192.

Figure 75 Remove an MBM



3. Grasp the top and bottom edges of the MBM. Remove the MBM from the expansion unit. Place the MBM in a flat, clean, and static-free surface.

> **Warning:** Protect the hardware components against damage from electrostatic discharge. Always wear a ground wrist strap before you handle components. Always place the components in a static-free container.

4. Proceed to Installing the new expansion unit on page 193.

Inserting the MBM in the new expansion unit

To insert the MBM in the new expansion unit, see Installing a media bay module in an expansion unit on page 97.

Proceed to Installing the new expansion unit on page 193.

Installing the new expansion unit

Use one of the following procedures to install the new expansion unit:

- Installing the Avaya BCM50 unit in an equipment rack on page 78
- Installing the Avaya BCM50 unit on the wall on page 82
- Installing the Avaya BCM50 unit on a desktop or shelf on page 87

After you install the new expansion unit, continue with the procedure To connect the cables on page 193.

To connect the cables

1. Insert the power supply retention clip into the new expansion unit.
2. Rotate the power supply retention clip so that the power supply jack is clear.
3. Connect the power supply cord to the expansion unit.
4. Rotate the power supply retention clip to lock the power supply cord in place.
5. Connect the expansion cable to the expansion port on the front of the expansion unit.
6. Connect the LAN cable to the LAN port on the front of the expansion unit (if applicable).
7. Connect all of the telephone line and extension cables to the MBM inserted in the expansion unit. To ensure the same line and extension numbering, make sure you connect the cables to the ports from which you removed them.

Warning: Leakage currents

You must connect the power cord to a grounded outlet before connecting the telephony and data networking cables to the system.

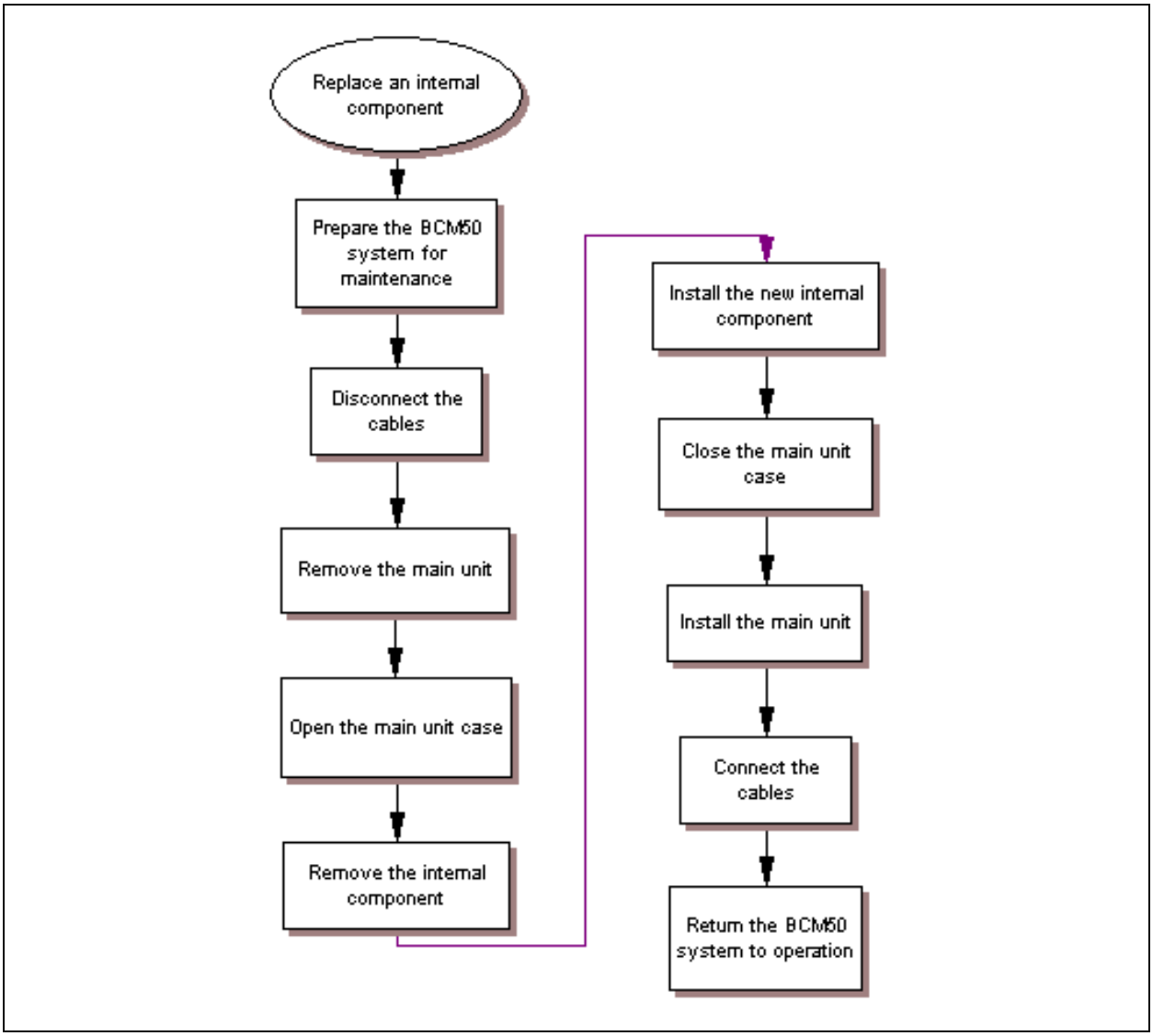
8. Use Business Element Manager to enable the MBM. For more information about enabling an MBM, see *Avaya Business Communications Manger 6.0 Administration and Security*.

Chapter 24
Replacing an internal component

You can replace three components inside the main unit: the hard disk, the fan, and the router card. The figure Overview of replacing an internal component on page 195 shows an overview of replacing an internal component.

Caution: You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

Figure 76 Overview of replacing an internal component


Replace an internal component
Prepare the BCM50 system for maintenance
Disconnect the cables
Remove the main unit
Open the main unit case
Remove the internal component
Install the new internal component
Close the main unit case
Install the main unit
Connect the cables
Return the BCM50 system to operation

For information about replacing an internal component:

- Preparing the system for maintenance on page 196
- Removing the main unit on page 196
- Opening the main unit case on page 196
- Removing an internal component on page 198
- Inserting the new component on page 201
- Closing the main unit case on page 210
- Installing the main unit on page 211

Special tools

Before you replace the components, ensure you have the following equipment:

- Phillips screwdriver #2, with a 3.5-inch blade
- 3/16-inch slot screwdriver
- antistatic wrist grounding strap



Caution: You must wear an antistatic grounding strap at all times when handling electronic components. Failure to do so can result in damage to the equipment.

Preparing the system for maintenance

If the system is still operating, perform the procedure To shut down the system on page 172.

After the system shuts down, perform the procedure To disconnect the cables on page 181.

Removing the main unit

The method you use to remove the main unit depends on how the unit is mounted. Use one of the following procedures to remove the Avaya Business Communications Manager 50 (Avaya BCM50) main unit:

- To remove a rack-mounted main unit on page 182
- To remove a wall-mounted main unit on page 182
- To remove a desktop mounted main unit on page 182

Opening the main unit case

This procedure is based on the assumption that you intend to perform maintenance activities. Do not operate the main unit with the cover removed.

To open the main unit case

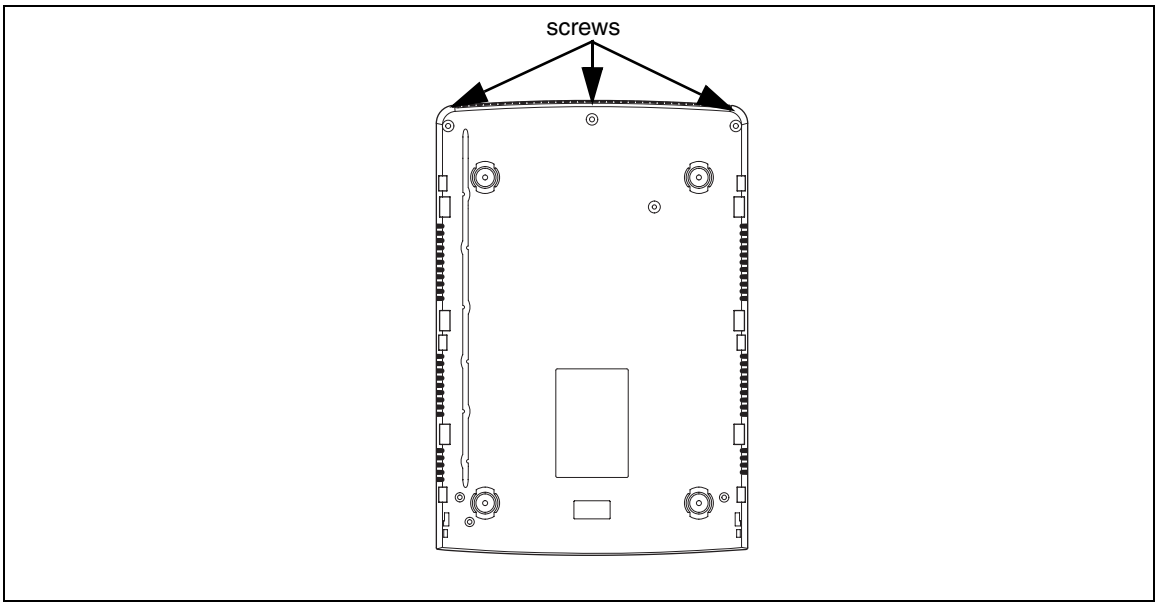
Danger: Electrical shock warning.
Disconnect the power cord, telephone cables, and network cables before opening the Avaya BCM50 main unit.

1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 Turn the main unit over so that the bottom of the unit is facing up.

3 Remove the three case screws from the back of the unit. For the location of the screws, see the figure BCM50 case screws on page 197.

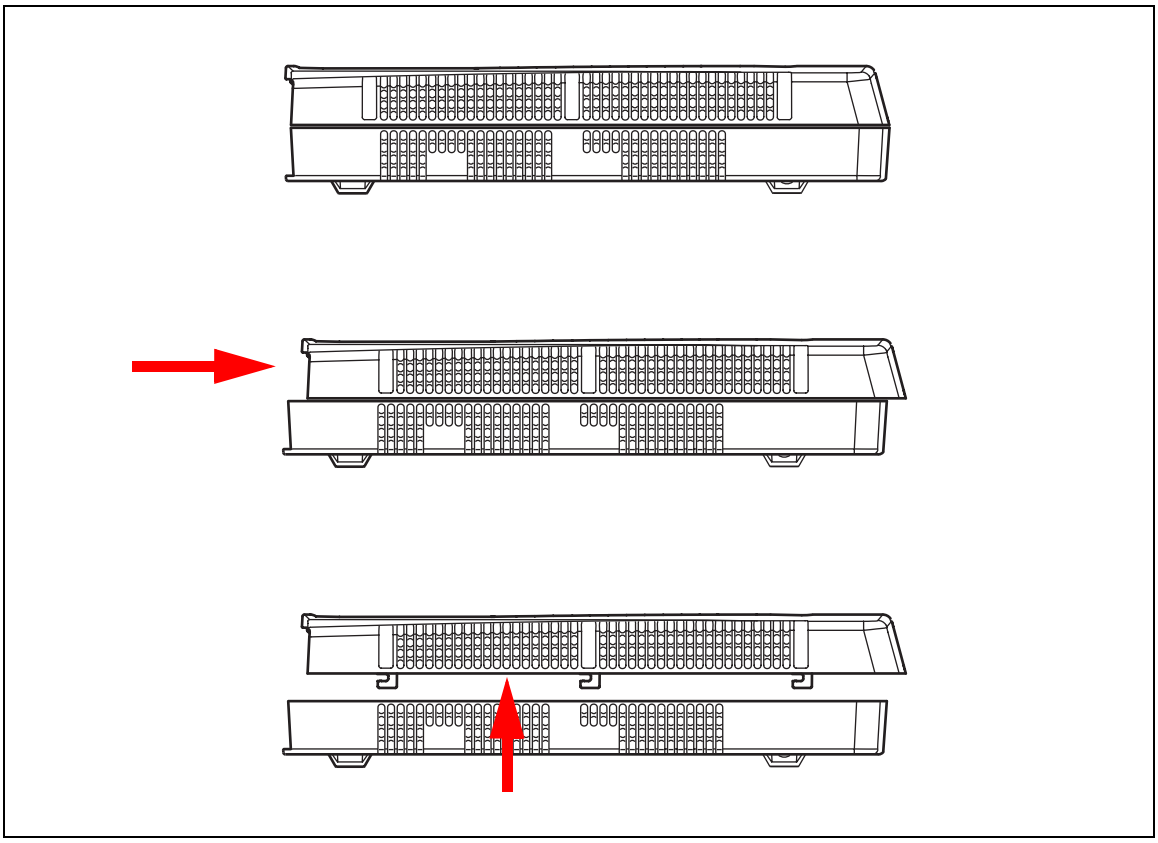
Figure 77 BCM50 case screws



4 Turn the Avaya BCM50 unit over so that the top of the unit is facing up.

5 While holding the bottom of the BCM50 case, slide the top of the case back to disengage the locking clips. See the figure Remove the top of the case on page 198.

Figure 78 Remove the top of the case



6 Lift the top of the case off the BCM50 unit.

7 Proceed to Removing an internal component on page 198.

Removing an internal component

Use one of the following procedures to remove the component:

- To remove the hard disk on page 199
- To remove the fan on page 200
- To remove the router card on page 201

Warning: Protect the hardware components against damage from electrostatic discharge. Always wear a ground wriststrap before you handle components. Always place the components in static-free container.

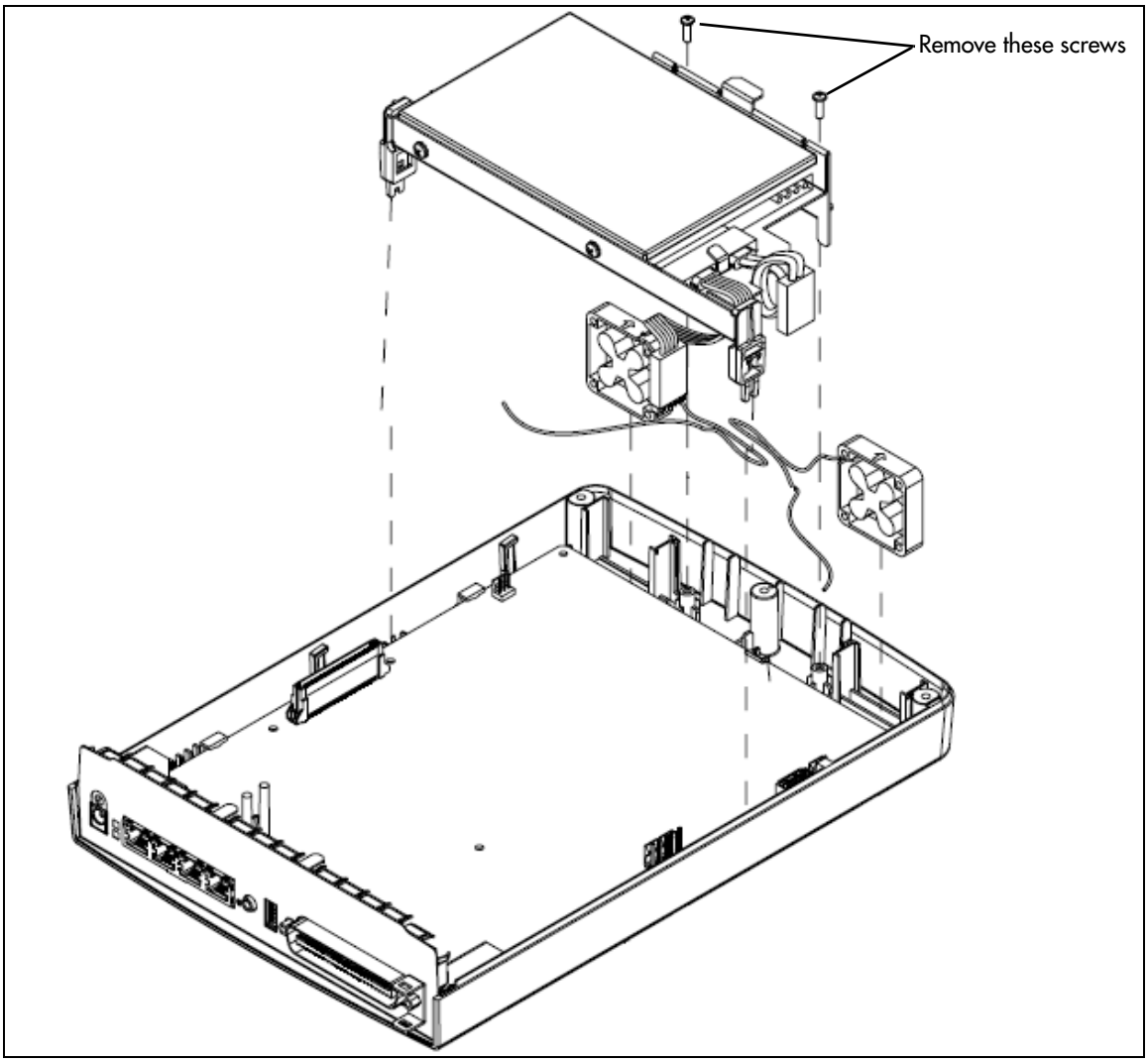
To remove the hard disk

Caution: Do not use an electric or magnetized screwdriver near the hard disk. You can lose the information stored on the disk. Shock can damage the hard disk. Do not drop or hit the hard disk.

1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 Remove the two screws that attach the hard disk assembly to the main unit. See the figure Cable routing on page 205.

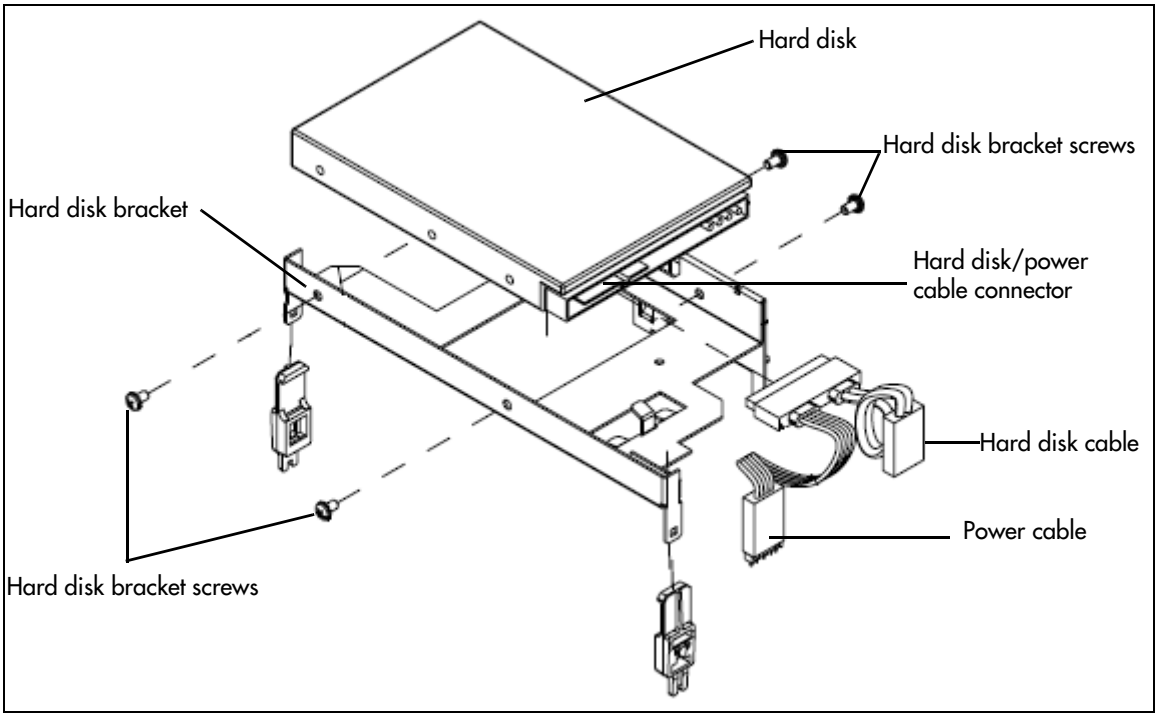
Figure 79 Hard disk and bracket installation



3 Lift the hard disk and hard disk bracket from the main unit and place them on a flat, clean, static-free surface.

4 Remove the four screws that secure the hard disk to the hard disk bracket. See the figure Hard disk and bracket assembly on page 200.

Figure 80 Hard disk and bracket assembly



5 Remove the hard disk and power cable from the connector.

6 Lift the hard disk from the hard disk bracket and set it on a flat, clean, static-free surface.

7 Proceed to Inserting the new component on page 201.

To remove the fan

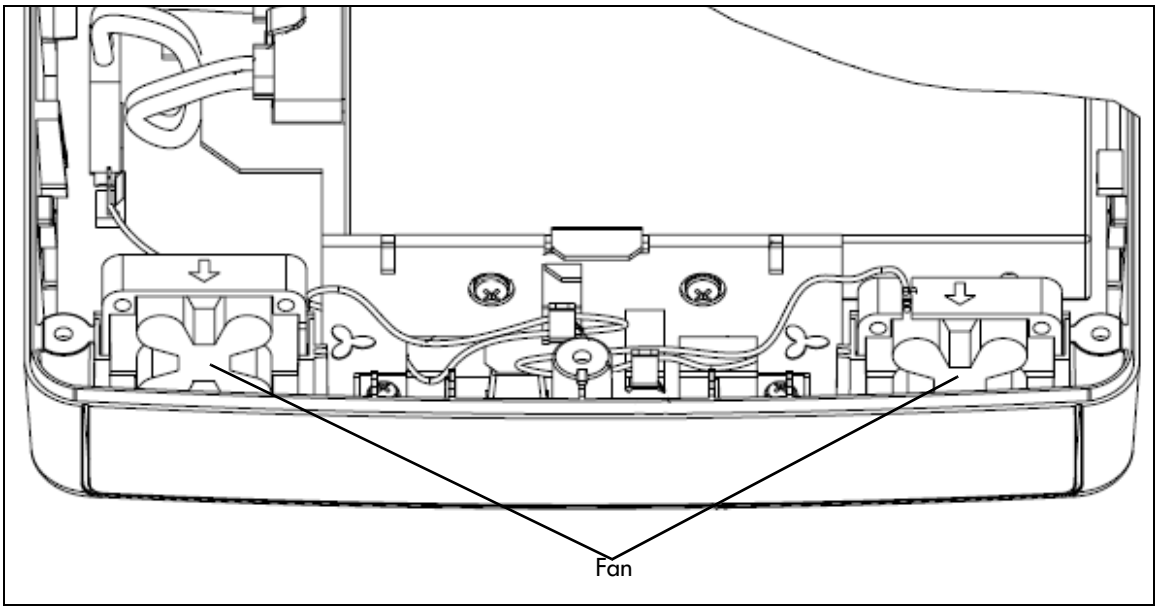
1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 Ensure the main unit case is open. If necessary, see Opening the main unit case on page 196.

3 Remove the hard disk to access the fan cable. See the procedure To remove the hard disk on page 199.

4 Remove the fan cable from the header. See the figure Location of fan on page 201.

Figure 81 Location of fan



5 Lift the fan from the main unit and set it on a flat, clean, static-free surface.

6 Proceed to Inserting the new component on page 201.

To remove the router card

1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 Ensure the main unit case is open. If necessary, see Opening the main unit case on page 196.

3 Remove the three router card retaining screws.

4 Gently lift the back of the router card to disengage it from the card connector.

5 Slide the router card back so the modular connectors clear the bezel.

6 Lift the router card over the top of the LED pipes and place it on a flat, clean, static-free surface.

7 Proceed to Inserting the new component on page 201.

Inserting the new component

Use one of the following procedures to insert the new component:

- To insert the new hard disk on page 202
- To install a multi-image hard disk on page 205
- To prepare a multi-image hard disk drive for Quick Installation on another Avaya BCM system on page 206
- To insert the new fan on page 209

- To insert the new router card on page 209

Caution: Use only a Avaya-approved replacement part. Contact your account representative for the current list of approved replacement parts.

Warning: Protect the hardware components against damage from electrostatic discharge. Always wear a ground wriststrap before you handle components. Always place the components in static-free container.

To insert the new hard disk

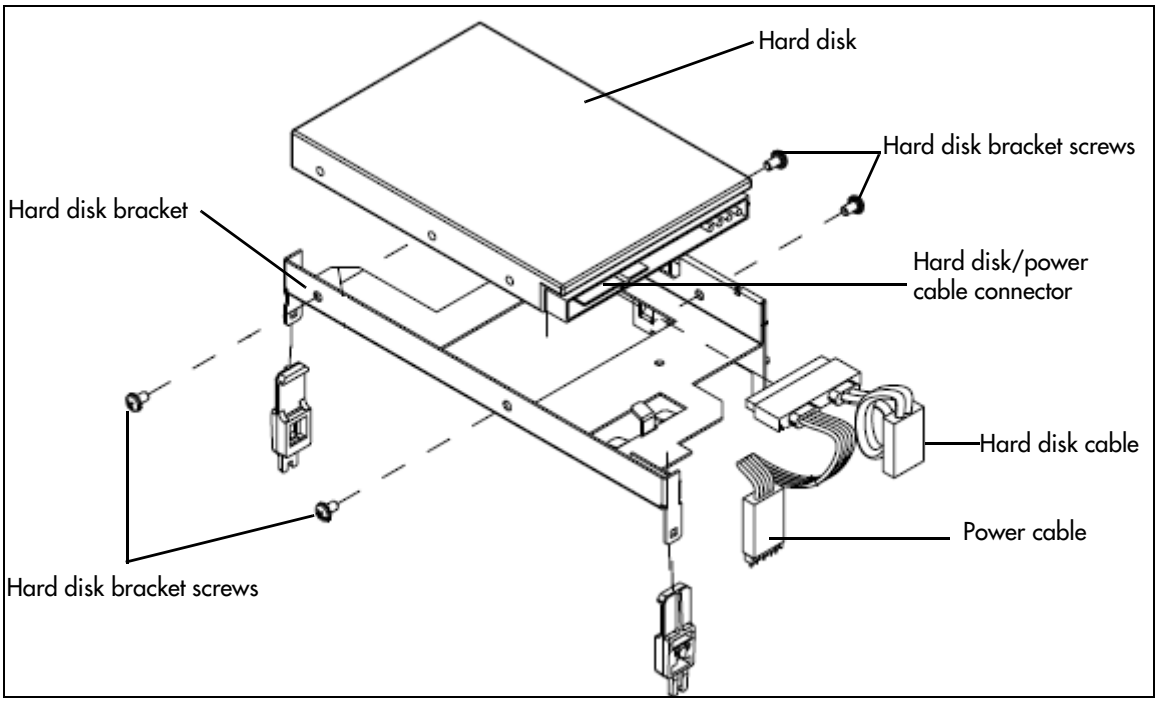
Caution: Do not use an electric or magnetized screwdriver near the hard disk. You can lose the information stored on the disk. Shock can damage the hard disk. Do not drop or hit the hard disk.

1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 Connect the hard disk cable and power cable to the hard disk connector. See the figure Hard disk and bracket assembly on page 203.

Note: If the cables do not insert properly, check that the notch on the hard disk connector is aligned with the corresponding notch on the cable.

Figure 82 Hard disk and bracket assembly



3 Place the new hard disk in the hard disk bracket.

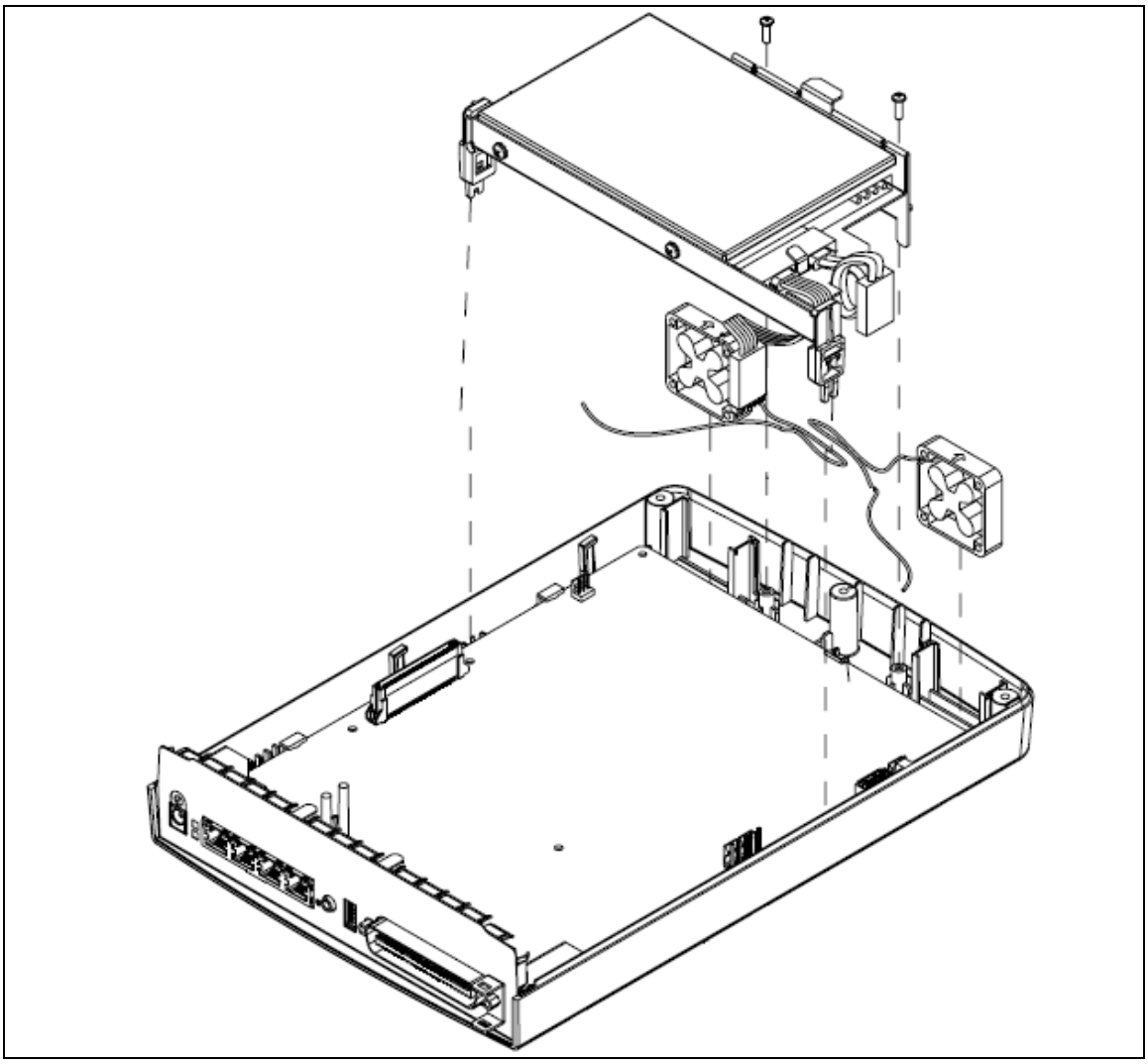
4 Use the four hard disk bracket screws to secure the hard disk to the bracket.

Caution: Use only the screws that you removed from the hard disk in the procedure To remove the hard disk on page 199. Using other screws can damage the hard disk.

5 Set the hard disk and bracket in the main unit. See the figure Cable routing on page 205.

Make sure that the hard disk cable and power cable are routed properly. Route the power cable under the bracket and loop the hard disk cable as shown.

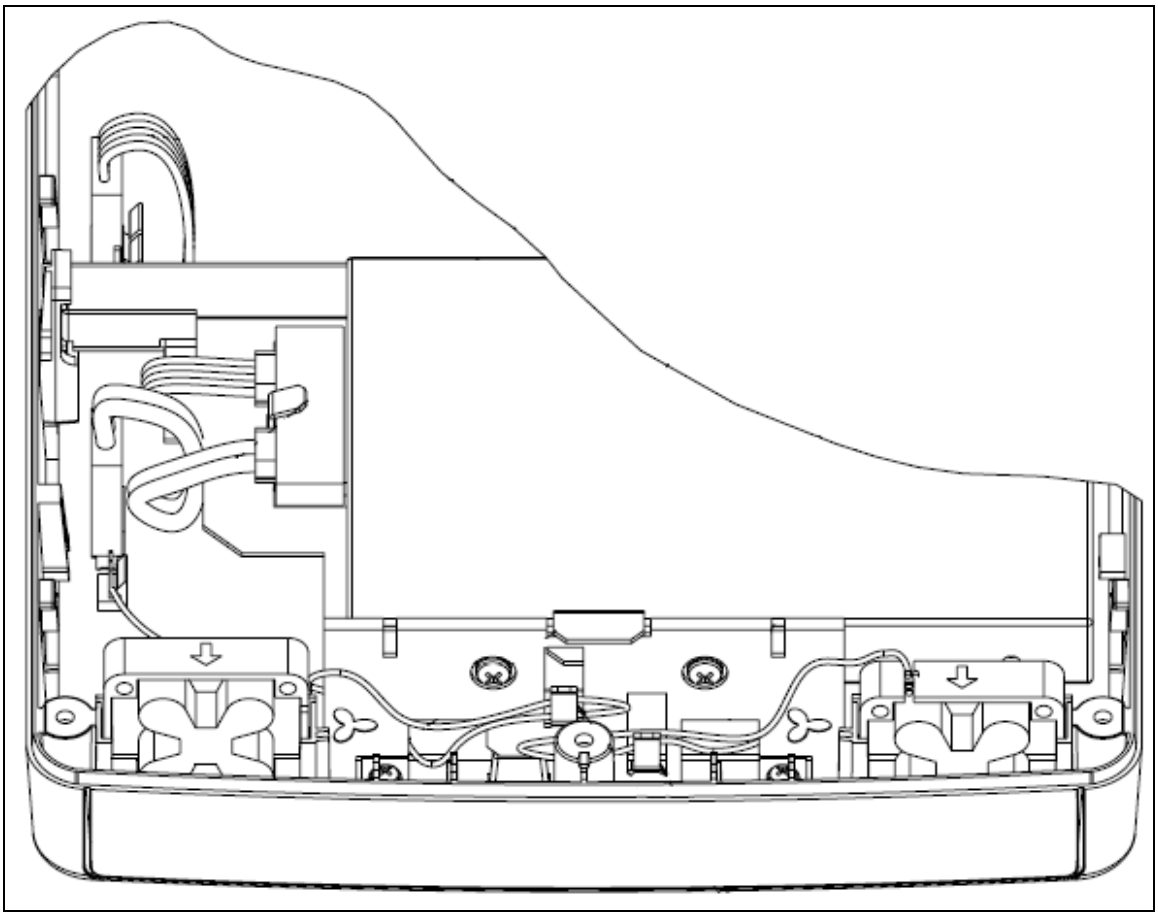
Figure 83 Hard disk and bracket installation



6 Press down lightly on the top of the hard disk to ensure that the hard disk bracket is seated properly.

7 Ensure you route the fan cable through the cutouts under the hard disk and bracket. Also, make sure you secure any slack in the fan cable in the clips on the hard disk bracket. See the figure Cable routing on page 205).

Figure 84 Cable routing



Caution: Ensure that you follow the same routing for the cables as before you removed the component.

8 Fasten the hard disk assembly to the main unit with two screws. Use only the supplied screws, since other screws can damage the unit.

9 Perform a restore or manually reprogram the system.

10 Continue with the procedure To close the main unit case on page 210.

To install a multi-image hard disk

1 Install the multi-image hard disk drive as you would a start hard disk drive. For more information, see To insert the new hard disk on page 202.

2 Continue with the procedure To close the main unit case on page 210.

3 Power on the Avaya BCM50 system.

The HDD LED (or both HDD LEDs if a redundant hard disk is present) should be green indicating that the replacement disk was installed correctly. The BCM Power LED should be green, and the Status LED should be flashing yellow, indicating that the CLI is ready to start the image realignment process.

4 Log onto the Avaya BCM through the OAM port from an SSH client, such as PuTTY, using the default username (nnadmin) and password (PlsChgMe!). The Quick Configuration menu appears.

```
------------------------------------------------------------------------
..............  BUSINESS COMMUNICATIONS MANAGER  .......................
------------------------------------------------------------------------

                              QUICK CONFIGURATION
========================================================================

(0)---> Exit
(1)---> Install and Activate a BCM SW Release
(2)---> Advanced Menu
(3)---> Display status of BCM SW Release installation
(4)---> Reboot
(5)---> Shutdown
(6)---> Help

========================================================================

Make Selection [ 0 1 2 3 4 5 6 ] :
```

Note: The IP address of the BCM OAM port is 10.10.11.1. Your PC needs to be configured on the same subnet, for example with an IP address 10.10.11.2 and subnet 255.255.255.0.

5 Select option 1 to install and activate a BCM software release.

6 Select the correct BCM release you want to install. The installation process (initialization and activation) takes approximately 25 minutes. During this time, you can view the progess of the installation through the CLI windown while connected to the BCM through the OAM port. The system automatically reboots once the process completes.

Caution: Ensure you select the correct release version. Once the software is activated it cannot be reversed. If you want a different software release installed, you will require a replacement hard disk.

To prepare a multi-image hard disk drive for Quick Installation on another Avaya BCM system

1 Install the multi-image hard disk drive as you would a start hard disk drive. This can be done on any Avaya BCM50 or Avaya BCM450 system. For more information about installing a hard disk drive on a BCM50 system, see To insert the new hard disk on page 202. For more information about installing a hard disk drive in a BCM450 system, see A*vaya Business Communications Manager 450 6.0 Maintenance* (NN40170-503).

2 Power on the BCM system.

The HDD LED (or both HDD LEDs if a redundant hard disk is present) should be green indicating that the replacement disk was installed correctly. The BCM Power LED should be green, and the Status LED should be flashing yellow, indicating that the CLI is ready to start the image realignment process.

3 Log onto the Avaya BCM through the OAM port from an SSH client, such as PuTTY, using the default username (nnadmin) and password (PlsChgMe!). The Quick Configuration menu appears.

```
------------------------------------------------------------------------
..............  BUSINESS COMMUNICATIONS MANAGER  .......................
------------------------------------------------------------------------

                            QUICK CONFIGURATION
========================================================================

(0)---> Exit
(1)---> Install and Activate a BCM SW Release
(2)---> Advanced Menu
(3)---> Display status of BCM SW Release installation
(4)---> Reboot
(5)---> Shutdown
(6)---> Help

========================================================================

Make Selection [ 0 1 2 3 4 5 6 ] :
```

Note: The IP address of the BCM OAM port is 10.10.11.1. Your PC needs to be configured on the same subnet, for example with an IP address 10.10.11.2 and subnet 255.255.255.0.

4 Select option 2. The Advanced menu appears.

```
        The current status is: BCM50 R6 Install Image Stage

                            Advanced Menu
========================================================================

(0) ---> Return to Main Menu
(1) ---> Initialize a SW Release for a different system
(2) ---> Display status of BCM SW Release installation
(3) ---> Display BCM SW Release installation log
(4) ---> Help

========================================================================

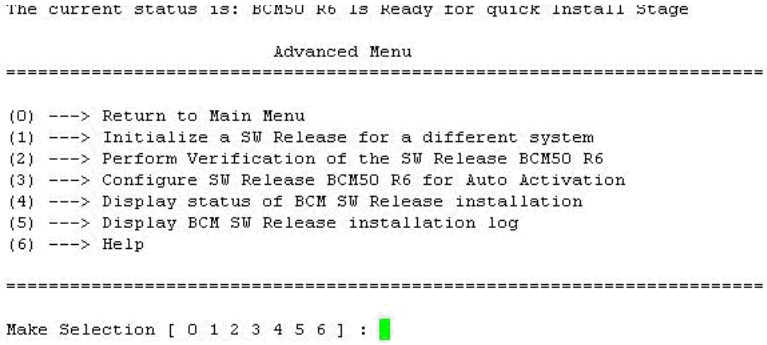
Make Selection [ 0 1 2 3 4 ] :
```

5 Select option 1 to initialize a software release for a different system.

6 Select the software release you want to install on the target BCM system.

The length of time the installation process takes depends on what system you are preforming the installation on, not on the software release. For instance, if you are preparing a hard disk

drive for a BCM450 system on a BCM50 system, the process takes approximately 22 minutes. If you are preparing a hard disk drive on a BCM450 system for a BCM50 system, the initialization takes approximately 5 minutes. After the process completes, press Enter to return to the Advanced menu.


The current status is: BCM50 R6 is Ready for Quick Install Stage
Advanced Menu
(0) ---> Return to Main Menu
(1) ---> Initialize a SW Release for a different system
(2) ---> Perform Verification of the SW Release BCM50 R6
(3) ---> Configure SW Release BCM50 R6 for Auto Activation
(4) ---> Display status of BCM SW Release installation
(5) ---> Display BCM SW Release installation log
(6) ---> Help
Make Selection [0 1 2 3 4 5 6] :

7 Select option 3 to configure the hard disk drive for auto-activation (optional).

8 Select option 0 to return to the main menu.

9 Select option 5 to shut down the system.

Caution: Do not reboot the system after initializing the software image if auto-activation is enabled. After the reboot, the software will attempt to activate. If you have the hard disk drive installed in a compatible system and the software activates you will no longer be able to change the initialized software image.

10 Remove the hard disk drive from the BCM system.

11 Install the hard disk drive in the target BCM system.

12 Power on the target BCM system. If auto-activation is enabled, the software attempts to auto-activate. If the BCM system and software are not compatible, it will not activate. In this case, perform the procedure To install a multi-image hard disk on page 205.

13 If auto-activation is not enabled, log onto the BCM system through the OAM port using the default username (nnadmin) and default password (PlsChgMe!). The Quick Configuration menu appears.

14 Select option 2 to go to the Advanced menu, and then select option 2 to verify the installed software (optional). This process takes approximately 26 minutes on a BCM50 system and approximately 13 minutes on a BCM450 system.

15 Select option 0 to got back to the Quick Configuration menu.

16 Select option 1 to activate the initialized software release (recommended)

OR

Select option 2 to go to the Advanced menu, then select option 4 to activate and complete the install of the initialized software release.

17 Select the software release you want to activate. The activation process takes approximately 3 minutes to complete. When the activation process completes, the system reboots automatically.

To insert the new fan

1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 Insert the new fan into the fan slot in the bottom of the Avaya BCM50 case.

Ensure the fans are oriented so air flows out of the unit.

Note: Ensure the label of the new fan faces the back of the BCM50 unit. Air must flow out of the unit as indicated by the arrows imprinted on the fan.

3 Connect the fan cable to the header.

4 Ensure your route the fan cable through the cutouts under the hard disk and bracket. Also, make sure that you secure any slack in the fan cable with the clips on the hard disk bracket. See the figure Cable routing on page 205.

Note: Do not force the cable.
The connectors on the fan cable prevents you from inserting the cable backwards. If you cannot insert the cable properly, check that the raised edge on the fan cable connector faces the plastic tab on the header.

5 Insert the hard disk. See the procedure To insert the new hard disk on page 202.

6 Continue with the procedure To close the main unit case on page 210.

To insert the new router card

1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 With the back of the router card raised enough to clear the LED pipes, align the modular connectors on the router card with the corresponding holes in the bezel.

3 Move the router card forward until the front edge of the card touches the bezel.

4 Align the card connector on the router card with the connector on the Compact Services Card (CSC).

5 Gently press down on the back of the router card to seat the router card in the connector on the CSC.

6 Use the three screws you removed in the procedure To remove the router card on page 201 to secure the Router card to the CSC.

Caution: Use only the original screws to secure the Router card. Using other screws can interfere with proper installation.

7 Continue with the procedure To close the main unit case on page 210.

Closing the main unit case

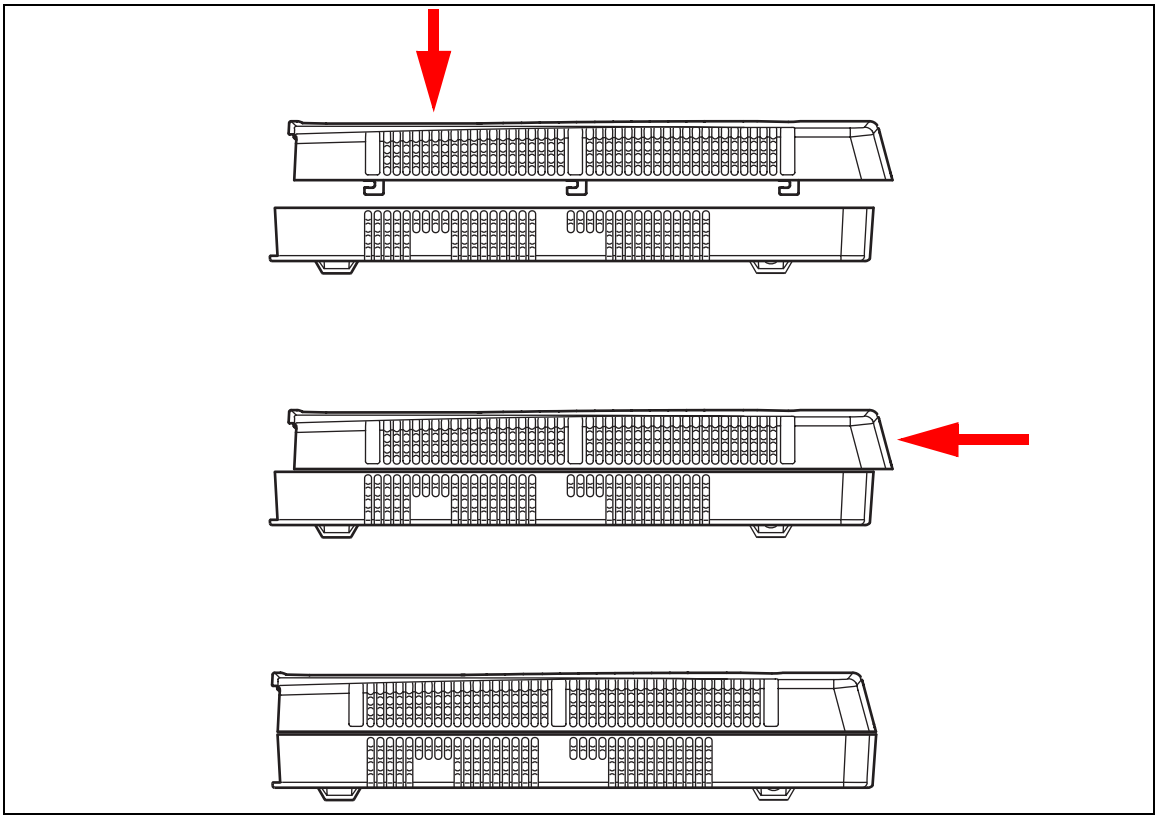
To close the main unit case

1 Attach one end of a grounding strap to your wrist and the other end to a grounded metal surface.

2 Place the top of the case on top of the main unit case. Make sure the side edges of the case are aligned and the front of the top is back about 1 cm (3/8 in.).

3 Slide the top of the case forward until it clicks in place. See the figure Replacing the top of the case on page 210.

Figure 85 Replacing the top of the case



4 Turn the main unit over so you can access the screws holes on the bottom of the unit.

5 Insert the three case screws in the back of the unit and tighten them. For the location of the screws, see the figure BCM50 case screws on page 197.

Caution: Use only the screws that you removed from the unit in the procedure Opening the main unit case on page 196. Do not use any other screws.

6 Turn the main unit over so that the top of the unit faces up.

7 Proceed to Installing the main unit on page 211.

Installing the main unit

Use one of the following procedures to install the Avaya BCM50 main unit:

- Installing the Avaya BCM50 unit on the rack-mount shelf on page 80
- To install the Avaya BCM50 unit on the wall-mount bracket on page 84
- To install the Avaya BCM50 unit on a desktop or shelf on page 87

Connecting the cables

Use the procedure To connect the cables on page 183 to reconnect the cables to the main unit.

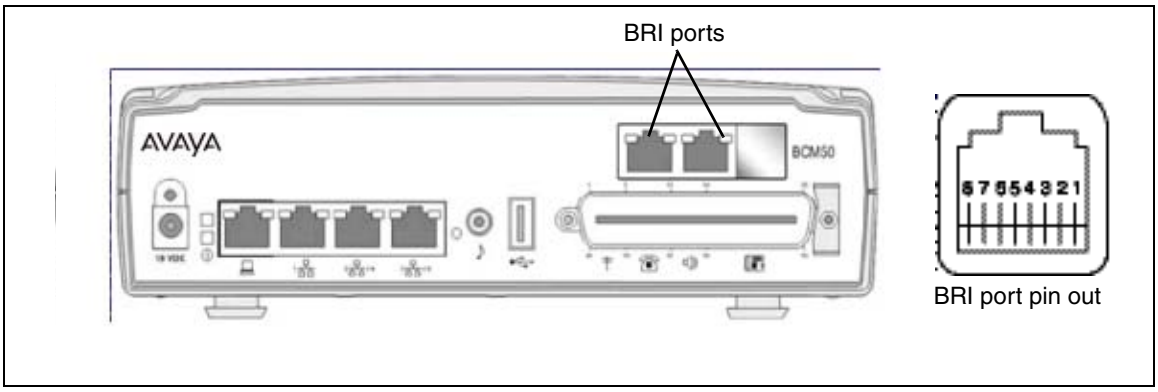
Appendix A
BRI wiring chart

The digital BRI ISDN lines connects to the Avaya Business Communications Manager 50b Avaya BCM50b), Avaya BCM50ba, and Avaya BCM50be main units through the BRI ports (RJ-45) on the front of the main units. See the figure BRI ports and pin out (Avaya BCM50b shown) on page 213.

The figure BRI ports and pin out (Avaya BCM50b shown) on page 213, the table BRI port wiring on page 213, and the table BRI line numbering on page 214 apply to S-Loop and T-Loop connections. S-Loop are used to connect S-Loop devices such as video phones, terminal adapters, and Grp 3 Fax machines. The T-Loops are used to connect to the CO/PSTN.

Warning: For a U-loop connection, the BRI port must be connected only to an NT1 provided by the service provider. The NT1 must provide a Telecommunication Network Voltage (TNV) to Safety Extra Low Voltage (SELV) barrier.

Figure 86 BRI ports and pin out (Avaya BCM50b shown)



The table BRI port wiring on page 213 and the table BRI line numbering on page 214 list the wiring details for the RJ-45 ports.

Table 31 BRI port wiring (Sheet 1 of 2)

Pin	Signal	Signal on system side
1	No connection	No connection
2	No connection	No connection
3	+ Receive (+Rx)	+Tx
4	+ Transmit (+Tx)	+Rx
5	- Transmit (-Tx)	-Rx
6	- Receive (-Rx)	-Tx

Table 31 BRI port wiring (Sheet 2 of 2)

Pin	Signal	Signal on system side
7	No connection	No connection
8	No connection	No connection

Table 32 BRI line numbering

Port number	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
1	065 – 066	095 – 096
2	067 – 068	097 – 098
3	069 – 070	099 – 100
4	071 – 072	101 – 102

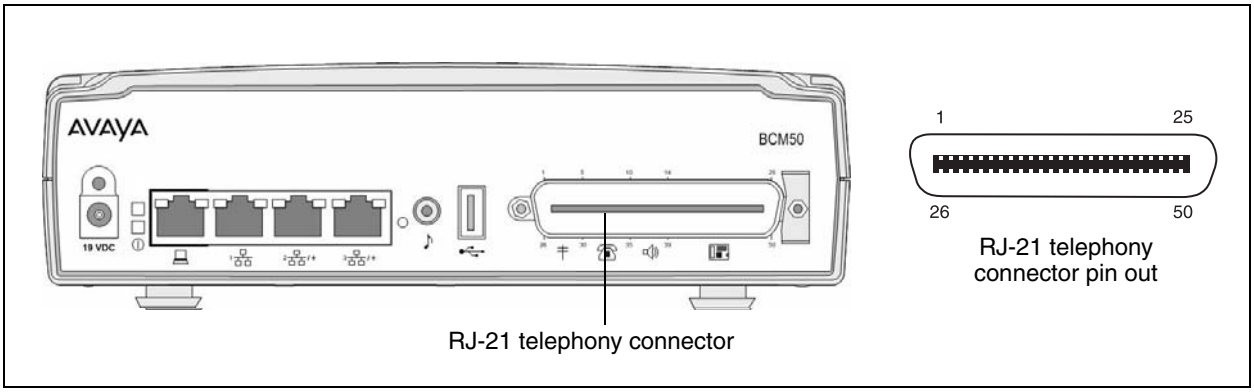
Appendix B
RJ-21 telephony connector wiring chart

You can connect 4 analog telephone lines (standard main units only), 4 analog telephony devices, and 12 digital telephones to the RJ-21 telephony connector.

Note: The four analog lines on the RJ-21 telephony connector are available only on the standard main units. The four analog lines are not available on the BRI series (b-series) main units, which have two BRI ports instead.

The figure RJ-21 telephony connector on an Avaya Business Communications Manager 50 (Avaya BCM50) on page 215 shows the RJ-21 telephony connector on an Avaya BCM50.

Figure 87 RJ-21 telephony connector on an Avaya Business Communications Manager 50 (Avaya BCM50)



The table RJ-21 telephony connector wiring on page 215 lists the wiring details for the RJ-21 telephony connector.

Table 33 RJ-21 telephony connector wiring (Sheet 1 of 3)

Device	Pin	Connection	Wire color	Type of device	Port	Default DN	Default line number
1	26	Tip	White-Blue	**Analog line**	—	—	**061**
	1	Ring	Blue-White				
2	27	Tip	White-Orange	**Analog line**	—	—	**062**
	2	Ring	Orange-White				
3	28	Tip	White-Green	**Analog line**	—	—	**063**
	3	Ring	Green-White				
4	29	Tip	White-Brown	**Analog line**	—	—	**064**
	4	Ring	Brown-White				

Table 33 RJ-21 telephony connector wiring (Sheet 2 of 3)

Device	Pin	Connection	Wire color	Type of device	Port	Default DN	Default line number
Note: The four analog lines are available only on the standard main units; the analog lines are not available on the BRI series (b-series) main units, which have two BRI ports instead.							
5	30	Tip	White-Slate	**Analog Deskphone**	**413**	**233**	—
	5	Ring	Slate-White				
6	31	Tip	Red-Blue	**Analog Deskphone**	**414**	**234**	—
	6	Ring	Blue-Red				
7	32	Tip	Red-Orange	**Analog Deskphone**	**415**	**235**	—
	7	Ring	Orange-Red				
8	33	Tip	Red-Green	**Analog Deskphone**	**416**	**236**	—
	8	Ring	Green-Red				
9	34	No connection	Red-Brown	**No connection**	—	—	—
	9	No connection	Brown-Red				
10	35	Tip	Red-Slate	**Auxiliary Ringer**	—	—	—
	10	Ring	Slate-Red				
11	36	Tip	Black-Blue	**Page Relay**	—	—	—
	11	Ring	Blue-Black				
12	37	Tip	Black-Orange	**Page Output**	—	—	—
	12	Ring	Orange-Black				
13	38	Tip	Black-Green	**Music Source**	—	—	—
	13	Ring	Green-Black				
14	39	Tip	Black-Brown	**Digital Deskphone**	**412**	**232**	—
	14	Ring	Brown-Black				
15	40	Tip	Black-Slate	**Digital Deskphone**	**411**	**231**	—
	15	Ring	Slate-Black				
16	41	Tip	Yellow-Blue	**Digital Deskphone**	**410**	**230**	—
	16	Ring	Blue-Yellow				
17	42	Tip	Yellow-Orange	**Digital Deskphone**	**409**	**229**	—
	17	Ring	Orange-Yellow				
18	43	Tip	Yellow-Green	**Digital Deskphone**	**408**	**228**	—
	18	Ring	Green-Yellow				
19	44	Tip	Yellow-Brown	**Digital Deskphone**	**407**	**227**	—
	19	Ring	Brown-Yellow				
20	45	Tip	Yellow-Slate	**Digital Deskphone**	**406**	**226**	—
	20	Ring	Slate-Yellow				
21	46	Tip	Violet-Blue	**Digital Deskphone**	**405**	**225**	—
	21	Ring	Blue-Violet				

Table 33 RJ-21 telephony connector wiring (Sheet 3 of 3)

Device	Pin	Connection	Wire color	Type of device	Port	Default DN	Default line number
22	47	Tip	Violet-Orange	**Digital deskphone**	**404**	**224**	**—**
	22	Ring	Orange-Violet				
23	48	Tip	Violet-Green	**Digital deskphone**	**403**	**223**	**—**
	23	Ring	Green-Violet				
24	49	Tip	Violet-Brown	**Digital deskphone**	**402**	**222**	**—**
	24	Ring	Brown-Violet				
25	50	Tip	Violet-Slate	**Digital deskphone**	**401**	**221**	**—**
	25	Ring	Slate-Violet				

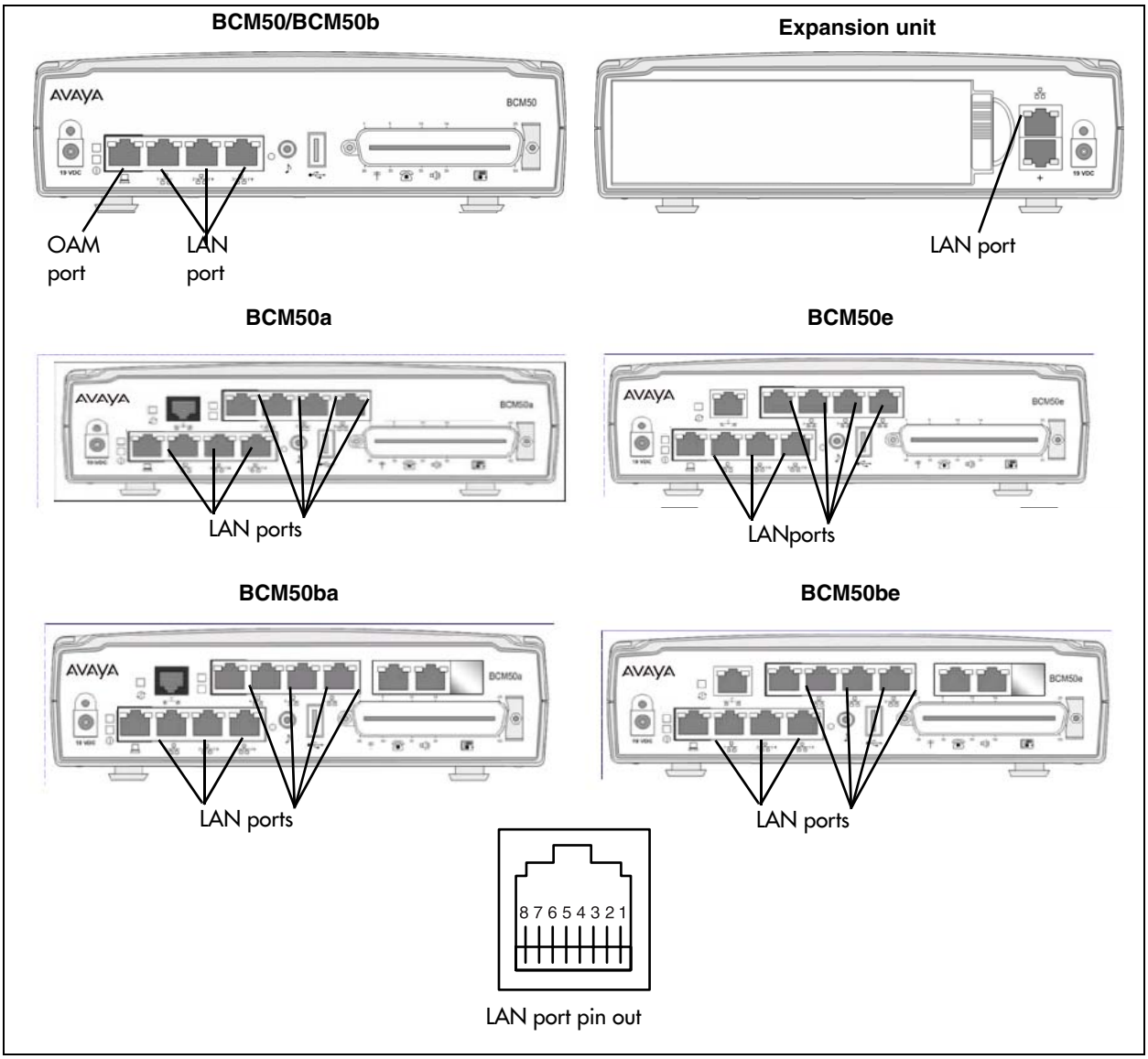
Appendix C
LAN ports wiring chart

All Avaya Business Communications Manager 50 (Avaya BCM50) units have LAN ports as follows:

- The BCM50 and BCM50b have three LAN ports.
- The BCM50a and BCM50ba have seven LAN ports.
- The BCM50e and BCM50be have seven LAN ports.
- The expansion unit has one LAN port.

The figure LAN ports on the Avaya BCM50 units on page 220 shows the LAN ports on the Avaya BCM50 units.

Figure 88 LAN ports on the Avaya BCM50 units



The table LAN port wiring on page 220 lists the wiring details for the LAN ports.

Table 34 LAN port wiring

Pin	Signal
1	+ Receive Data (Rx+)
2	– Receive Data (Rx–)
3	+ Transmit Data (Tx+)
4	No connection
5	No connection
6	– Transmit Data (Tx–)

Table 34 LAN port wiring

Pin	Signal
7	No connection
8	No connection

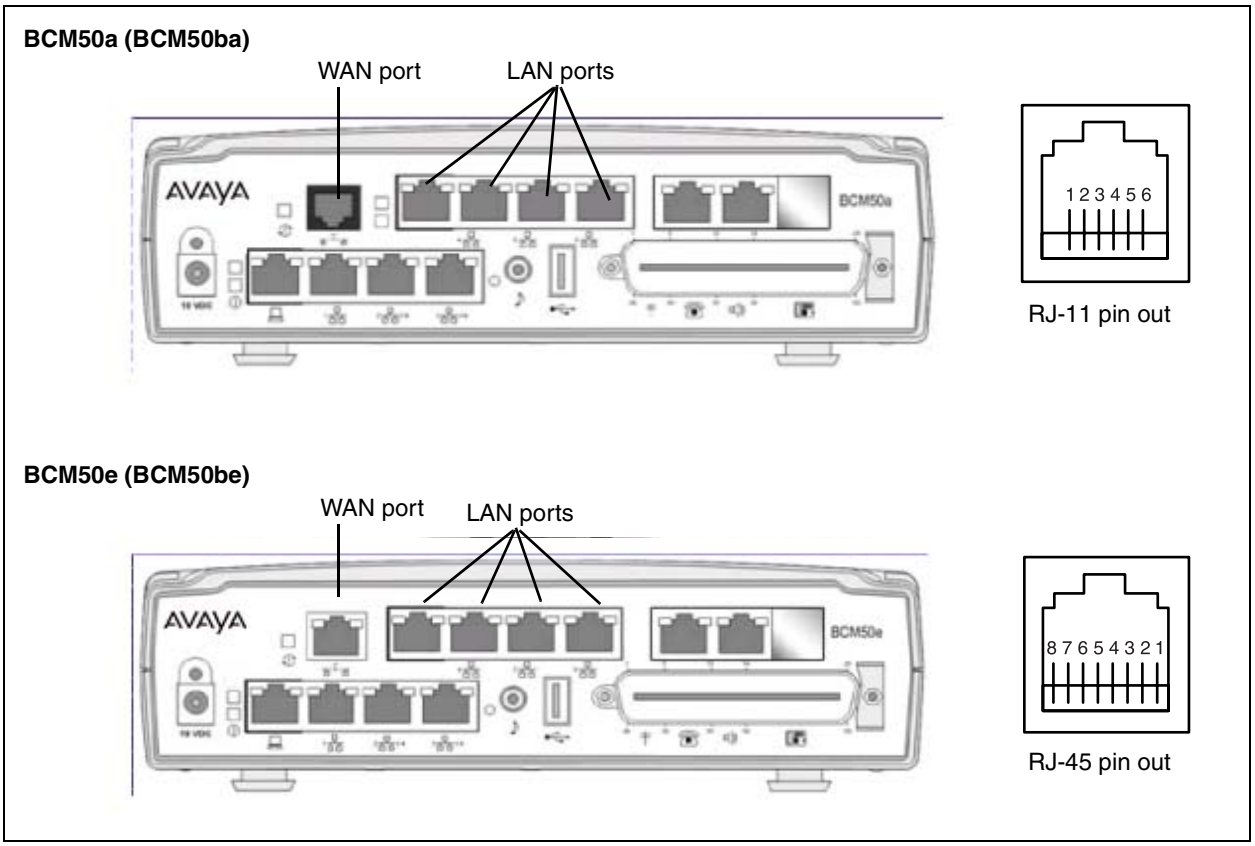
Appendix D
WAN ports wiring chart

Four Avaya Business Communications Manager 50 (Avaya BCM50) main units, the BCM50a, BCM50ba, BCM50e, and BCM50be, have a Router card.

On a BCM50a and BCM50ba main units, the WAN port is an RJ-11 port. On a BCM50e and BCM50be main units, the WAN port is an RJ-45 port.

The figure BCM50a,BCM50ba, BCM50e, BCM50be main unit WAN ports on page 223 shows the WAN ports for the BCM50a, BCM50ba, BCM50e, and BCM50be.

Figure 89 BCM50a,BCM50ba, BCM50e, BCM50be main unit WAN ports



The table RJ-11 WAN port wiring on page 223 and the table RJ-45 WAN port wiring on page 224 list the wiring details for the WAN ports.

Table 35 RJ-11 WAN port wiring (Sheet 1 of 2)

Pin	Signal
1	No connection
2	No connection

Table 35 RJ-11 WAN port wiring (Sheet 2 of 2)

Pin	Signal
3	Ring
4	Tip
5	No connection
6	No connection

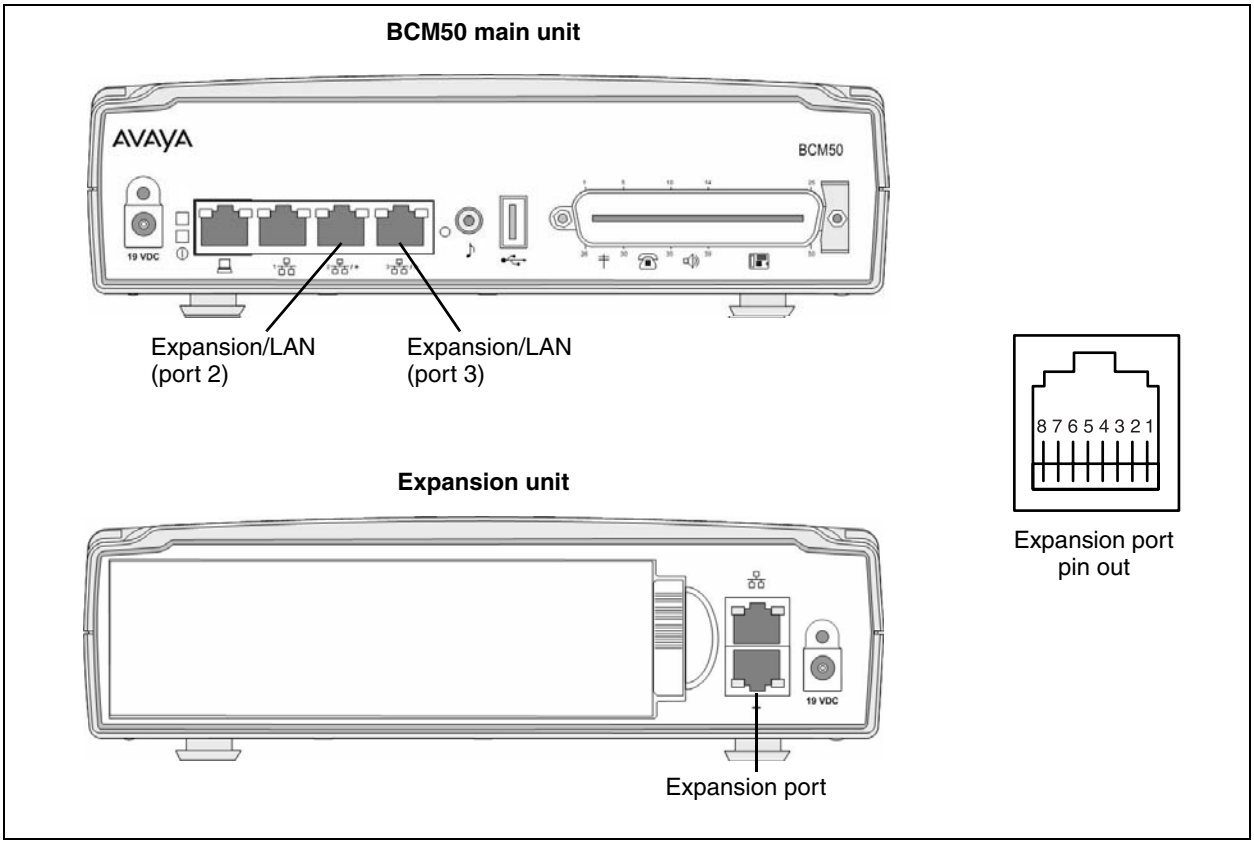
Table 36 RJ-45 WAN port wiring

Pin	Signal
1	+ Receive Data (Rx+)
2	– Receive Data (Rx–)
3	+ Transmit Data (Tx+)
4	No connection
5	No connection
6	– Transmit Data (Tx–)
7	No connection
8	No connection

Appendix E
Expansion ports wiring chart

Two of the four RJ-45 connectors on the Avaya Business Communications Manager 50 (Avaya BCM50), BCM50a, BCM50e, BCM50b, BCM50ba, and BCM50be main units are designated as expansion ports. See the figure Expansion ports on an Avaya BCM50 and an expansion unit on page 225. These ports connect to an expansion unit or connect network devices to the LAN.

Figure 90 Expansion ports on an Avaya BCM50 and an expansion unit



The table Expansion port wiring on page 225 lists the wiring details for the expansion ports.

Table 37 Expansion port wiring (Sheet 1 of 2)

Pin	Signal
1	+ Ethernet Receive Data
2	– Ethernet Receive Data
3	+ Ethernet Transmit Data
4	– FS256 Transmit Data
5	+ FS256 Transmit Data
6	– Ethernet Transmit Data

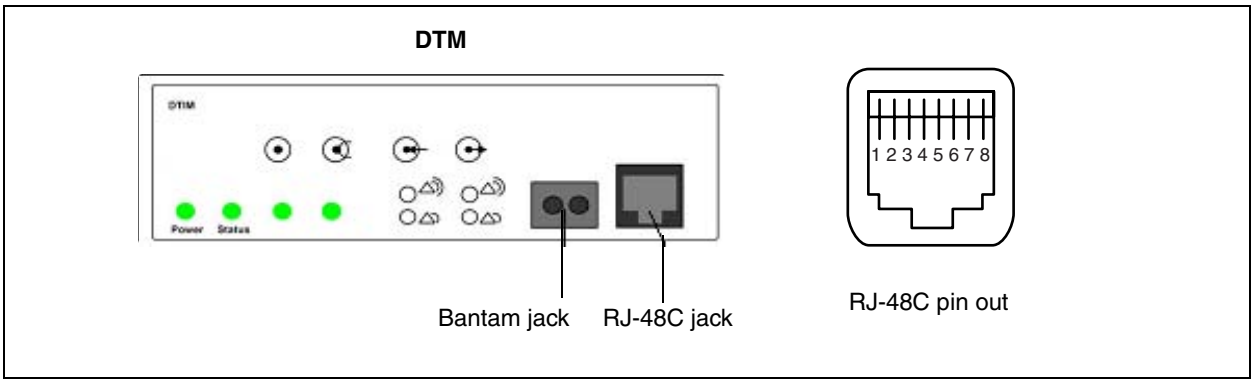
Table 37 Expansion port wiring (Sheet 2 of 2)

Pin	Signal
7	– FS256 Receive Data
8	+ FS256 Receive Data

Appendix F
DTM wiring chart

The digital deskphone line connects to the Digital Trunk Module (DTM) through the RJ-48c jack on the front of the media bay module (MBM). See the figure DTM RJ-48C port on page 227.

Figure 91 DTM RJ-48C port



The table DTM RJ-48c port wiring on page 227 and the table DTM line numbering on page 227 list the wiring details for the RJ-48C port.

Table 38 DTM RJ-48c port wiring

Pin	Signal
1	Receive Ring
2	Receive Tip
3	Receive Shield
4	Transmit Ring
5	Transmit Tip
6	Transmit Shield
7	No connection
8	No connection

Table 39 DTM line numbering

Line type	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
T1	065 – 088	095 – 118
PRI	065 – 087	095 – 117
E1	065 – 094	095 – 124

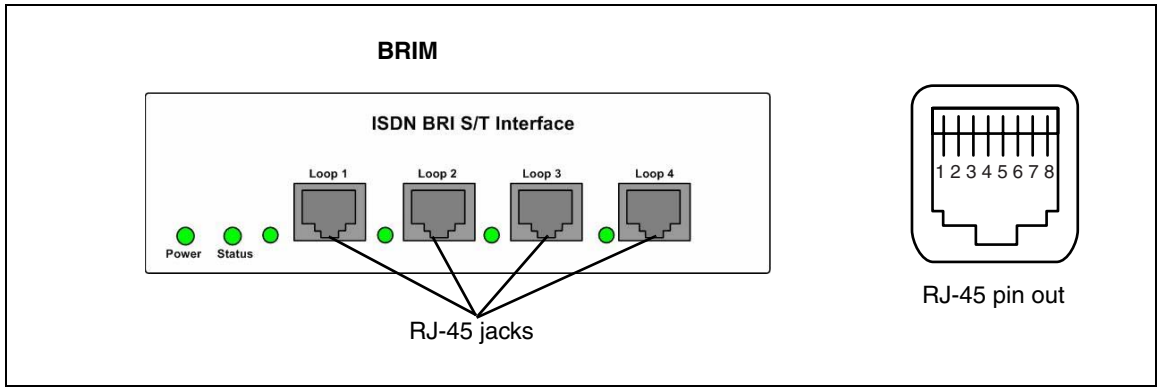
Appendix G
BRIM wiring chart

The digital BRI ISDN lines connects to the BRIM through the RJ-45 jacks on the front of the media bay module (MBM). See the figure BRIM RJ-45 ports on page 229. You can connect up to four BRI ISDN lines to the BRIM.

The figure BRIM RJ-45 ports on page 229, the table BRIM RJ-45 port wiring on page 229, and the table BRIM line numbering on page 230 apply to S-Loop and T-Loop connections. S-Loops connect S-Loop devices such as video phones, terminal adapters, and Grp 3 Fax machines. The T-Loops connect to the CO/PSTN.

Warning: For a U-loop connection, you must connect the BRIM only to an NT1 supplied by the service provider. The NT1 must provide a Telecommunication Network Voltage (TNV) to Safety Extra Low Voltage (SELV) barrier.

Figure 92 BRIM RJ-45 ports



The table BRIM RJ-45 port wiring on page 229 and the table BRIM line numbering on page 230 list the wiring details for the RJ-45 ports.

Table 40 BRIM RJ-45 port wiring

Pin	Signal	Signal on system side
1	No connection	No connection
2	No connection	No connection
3	+ Receive (+Rx)	+Tx
4	+ Transmit (+Tx)	+Rx
5	– Transmit (-Tx)	– Rx
6	– Receive (-Rx)	– Tx
7	No connection	No connection
8	No connection	No connection

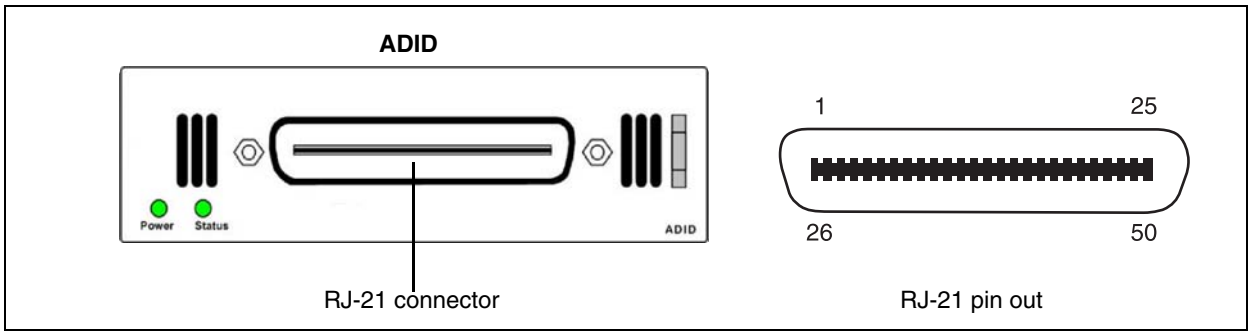
Table 41 BRIM line numbering

Port number	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
1	065–066	095–096
2	067–068	097–098
3	069–070	099–100
4	071–072	101– 02

Appendix H
ADID wiring chart

Analog telephone lines connect to the ADID4 or ADID8 through the RJ-21 connector on the front of the media bay module (MBM). See the figure ADID RJ-21 connector on page 231.

Figure 93 ADID RJ-21 connector



The table ADID4 and ADID8 RJ-21 connector wiring on page 231 lists the wiring details for the RJ-21 connector on the ADID4 and ADID8. Use the first four lines for the ADID4 and use all eight lines for the ADID8.

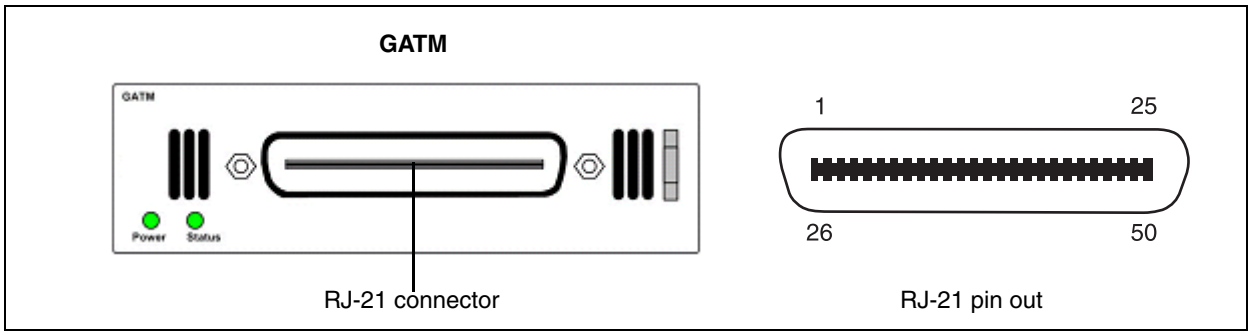
Table 42 ADID4 and ADID8 RJ-21 connector wiring

Line	Pin	Connection	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
1	26	Tip	**065**	**095**
	1	Ring		
2	27	Tip	**066**	**096**
	2	Ring		
3	28	Tip	**067**	**097**
	3	Ring		
4	29	Tip	**068**	**098**
	4	Ring		
5	30	Tip	**073**	**103**
	5	Ring		
6	31	Tip	**074**	**104**
	6	Ring		
7	32	Tip	**075**	**105**
	7	Ring		
8	33	Tip	**076**	**106**
	8	Ring		

Appendix I
GATM wiring chart

Analog telephone lines connect to the GATM4 or GATM8 through the RJ-21 connector on the front of the media bay module (MBM). See the figure GATM RJ-21 connector on page 233.

Figure 94 GATM RJ-21 connector



The table GATM4 RJ-21 connector wiring on page 233 lists the wiring details for the RJ-21 connector on the GATM4.

Table 43 GATM4 RJ-21 connector wiring (Sheet 1 of 2)

Line	Pin	Connection	Wire color	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
1	26	Tip	White-Blue	**065**	**095**
	1	Ring	Blue-White		
2	27	Tip	White-Orange	**066**	**096**
	2	Ring	Orange-White		
—	28	No connection	White-Green	—	—
	3	No connection	Green-White		
—	29	No connection	White-Brown	—	—
	4	No connection	Brown-White		
3	30	Tip	White-Slate	**067**	**097**
	5	Ring	Slate-White		
4	31	Tip	Red-Blue	**068**	**098**
	6	Ring	Blue-Red		
—	32	No connection	Red-Orange	—	—
	7	No connection	Orange-Red		
. . .	. . .	. . .	. . .	. . .	. . .

Table 43 GATM4 RJ-21 connector wiring (Sheet 2 of 2)

Line	Pin	Connection	Wire color	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
—	49	No connection	Violet-Brown	—	—
	24	No connection	Brown-Violet		
Aux	50	Tip	Violet-Slate	—	—
	25	Ring	Slate-Violet		
Note: The AUX port supports full data speeds. When the line is in use by an analog device, the icon is lit on the phone to indicate it is in use. If you try to seize the line using the phone, the display shows “in use”. Also, if a power failure occurs, an analog set on line 1 activates (powered by the CO).					

The table GATM8 RJ-21 connector wiring on page 234 lists the wiring details for the RJ-21 connector on the GATM8.

Table 44 GATM8 RJ-21 connector wiring (Sheet 1 of 2)

Line	Pin	Connection	Wire color	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
1	26	Tip	White-Blue	**065**	**095**
	1	Ring	Blue-White		
2	27	Tip	White-Orange	**066**	**096**
	2	Ring	Orange-White		
—	28	No connection	White-Green	—	—
	3	No connection	Green-White		
—	29	No connection	White-Brown	—	—
	4	No connection	Brown-White		
3	30	Tip	White-Slate	**067**	**097**
	5	Ring	Slate-White		
4	31	Tip	Red-Blue	**068**	**098**
	6	Ring	Blue-Red		
—	32	No connection	Red-Orange	—	—
	7	No connection	Orange-Red		
—	33	No connection	Red-Green	—	—
	8	No connection	Green-Red		
5	34	Tip	Red-Brown	**073**	**103**
	9	Ring	Brown-Red		
6	35	Tip	Red-Slate	**074**	**104**
	10	Ring	Slate-Red		
—	36	No connection	Black-Blue	—	—
	11	No connection	Blue-Black		
—	37	No connection	Black-Orange	—	—
	12	No connection	Orange-Black		

Table 44 GATM8 RJ-21 connector wiring (Sheet 2 of 2)

Line	Pin	Connection	Wire color	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
7	38	Tip	Black-Green	**075**	**105**
	13	Ring	Green-Black		
8	39	Tip	Black-Brown	**076**	**106**
	14	Ring	Brown-Black		
—	40	No connection	Black-Slate	—	—
	15	No connection	Slate-Black		
. . .	. . .	. . .	. . .	. . .	. . .
—	49	No connection	Violet-Brown	—	—
	24	No connection	Brown-Violet		
Aux (see Note)	50	Tip	Violet-Slate	—	—
	25	Ring	Slate-Violet		

Note: The AUX port supports full data speeds. When the line is in use by an analog device, the icon is lit on the phone to indicate it is in use. If you try to seize the line using the phone, the display shows “in use”. Also, if a power failure occurs, an analog set on line 1 activates (powered by the CO).

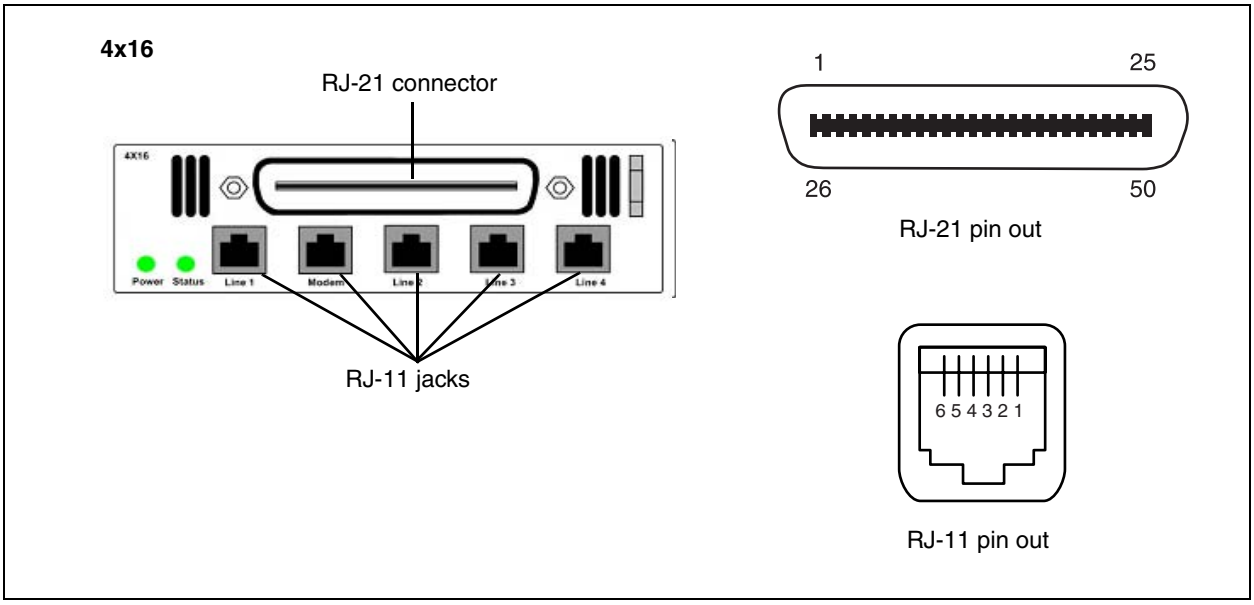
Appendix J
4x16 wiring charts

You can connect up to 4 analog telephone lines and up to 16 digital telephones to the 4x16 media bay module (MBM).

The analog deskphones lines connect to the 4x16 through the RJ-11 jacks (labeled 1 to 4) on the front of the MBM. Do not connect analog telephone lines to the auxiliary jack on the front of the media bay module. These jacks are intended for analog telephones designated as emergency deskphones. See the figure 4x16 connectors on page 237.

The digital deskphones, such as the Business Series Deskphones, connect to the RJ-21 connector on the front of the 4x16.

Figure 95 4x16 connectors



The table 4x16 RJ-11 port wiring on page 237 and the table 4x16 default line numbering on page 238 list the wiring details for the RJ-11 jacks on the 4x16. This wiring applies to the numbered ports and the Aux ports.

Table 45 4x16 RJ-11 port wiring (Sheet 1 of 2)

Pin	Signal
1	No connection
2	No connection
3	Ring
4	Tip

Table 45 4x16 RJ-11 port wiring (Sheet 2 of 2)

Pin	Signal
5	No connection
6	No connection

Table 46 4x16 default line numbering

Port number	Default line number on Expansion port 1	Default line number on Expansion port 2
1	065	095
2	066	096
3	067	097
4	068	098

The table 4x16 RJ-21 connector wiring on page 238 lists the wiring details for the RJ-21 connector on the 4x16.

Table 47 4x16 RJ-21 connector wiring (Sheet 1 of 2)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1	Default DN on Expansion port 2
1	26	Tip	White-Blue	**253**	**285**
	1	Ring	Blue-White		
2	27	Tip	White-Orange	**254**	**286**
	2	Ring	Orange-White		
3	28	Tip	White-Green	**255**	**287**
	3	Ring	Green-White		
4	29	Tip	White-Brown	**256**	**288**
	4	Ring	Brown-White		
5	30	Tip	White-Slate	**257**	**289**
	5	Ring	Slate-White		
6	31	Tip	Red-Blue	**258**	**290**
	6	Ring	Blue-Red		
7	32	Tip	Red-Orange	**259**	**291**
	7	Ring	Orange-Red		
8	33	Tip	Red-Green	**260**	**292**
	8	Ring	Green-Red		
9	34	Tip	Red-Brown	**261**	**293**
	9	Ring	Brown-Red		

Table 47 4x16 RJ-21 connector wiring (Sheet 2 of 2)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1	Default DN on Expansion port 2
10	35	Tip	Red-Slate	**262**	**294**
	10	Ring	Slate-Red		
11	36	Tip	Black-Blue	**263**	**295**
	11	Ring	Blue-Black		
12	37	Tip	Black-Orange	**264**	**296**
	12	Ring	Orange-Black		
13	38	Tip	Black-Green	**265**	**297**
	13	Ring	Green-Black		
14	39	Tip	Black-Brown	**266**	**298**
	14	Ring	Brown-Black		
15	40	Tip	Black-Slate	**267**	**299**
	15	Ring	Slate-Black		
16	41	Tip	Yellow-Blue	**268**	**300**
	16	Ring	Blue-Yellow		
—	42	No connection	Yellow-Orange	—	—
	17	No connection	Orange-Yellow		
. . .	. . .	. . .	. . .	. . .	. . .
—	50	No connection	Violet-Slate	—	—
	25	No connection	Slate-Violet		

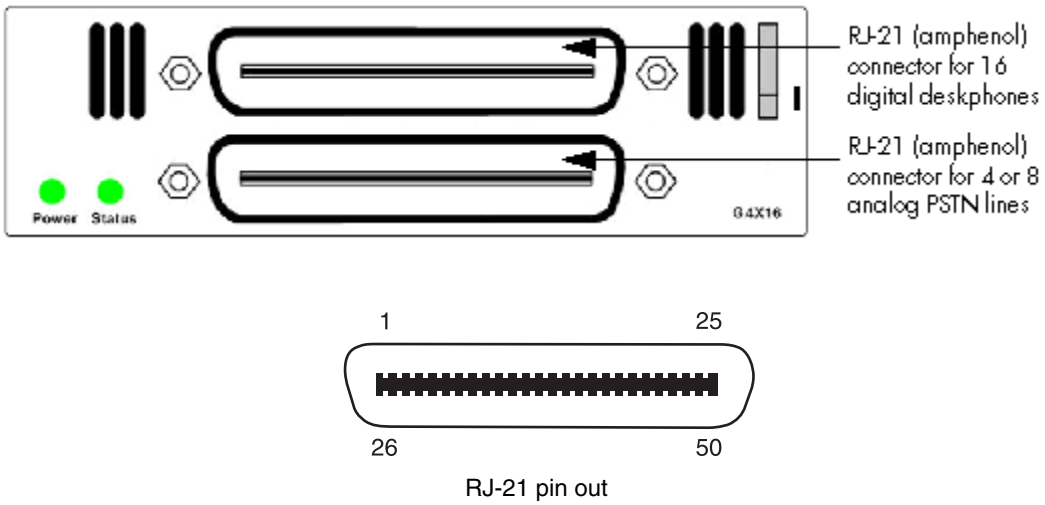
Appendix K
G4x16 and G8x16 wiring charts

You can connect 4 or 8 analog deskphone lines and up to 16 digital deskphones to the G4x16 or G8x16 media bay module (MBM).

The analog deskphones lines connect to the G4x16 or G8x16 through the lower RJ-21 (amphenol) connector on the front of the MBM. See the figure G4x16/G8x16 connectors on page 241.

The digital deskphones, such as the Business Series Deskphones, connect to the upper RJ-21 (amphenol) connector on the front of the G4x16 or G8x16 MBM.

Figure 96 G4x16/G8x16 connectors



The table G4x16/G8x16 MBM upper RJ-21 (amphenol) connector wiring for digital deskphones on page 241 lists the wiring details for the upper RJ-21 (amphenol) connector, and the table G4x16 and G8x16 lower RJ-21 (amphenol) connector wiring for analog PSTN lines on page 243 lists the wiring details for the lower RJ-21 (amphenol) connector on the G4x16 and G8x16 MBMs.

Table 48 G4x16/G8x16 MBM upper RJ-21 (amphenol) connector wiring for digital deskphones (Sheet 1 of 2)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1	Default DN on Expansion port 2
1	26	Tip	White-Blue	**253**	**285**
	1	Ring	Blue-White		
2	27	Tip	White-Orange	**254**	**286**
	2	Ring	Orange-White		

Table 48 G4x16/G8x16 MBM upper RJ-21 (amphenol) connector wiring for digital deskphones (Sheet 2 of 2)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1	Default DN on Expansion port 2
3	28	Tip	White-Green	**255**	**287**
	3	Ring	Green-White		
4	29	Tip	White-Brown	**256**	**288**
	4	Ring	Brown-White		
5	30	Tip	White-Slate	**257**	**289**
	5	Ring	Slate-White		
6	31	Tip	Red-Blue	**258**	**290**
	6	Ring	Blue-Red		
7	32	Tip	Red-Orange	**259**	**291**
	7	Ring	Orange-Red		
8	33	Tip	Red-Green	**260**	**292**
	8	Ring	Green-Red		
9	34	Tip	Red-Brown	**261**	**293**
	9	Ring	Brown-Red		
10	35	Tip	Red-Slate	**262**	**294**
	10	Ring	Slate-Red		
11	36	Tip	Black-Blue	**263**	**295**
	11	Ring	Blue-Black		
12	37	Tip	Black-Orange	**264**	**296**
	12	Ring	Orange-Black		
13	38	Tip	Black-Green	**265**	**297**
	13	Ring	Green-Black		
14	39	Tip	Black-Brown	**266**	**298**
	14	Ring	Brown-Black		
15	40	Tip	Black-Slate	**267**	**299**
	15	Ring	Slate-Black		
16	41	Tip	Yellow-Blue	**268**	**300**
	16	Ring	Blue-Yellow		
—	42	No connection	Yellow-Orange	—	—
	17	No connection	Orange-Yellow		
. . .	. . .	. . .	. . .	. . .	. . .
—	50	No connection	Violet-Slate	—	—
	25	No connection	Slate-Violet		

Table 49 G4x16 and G8x16 lower RJ-21 (amphenol) connector wiring for analog PSTN lines (Sheet 1 of 2)

Line	Pin	Connection	Wire color	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
1	26	Tip	White-Blue	**065**	**095**
	1	Ring	Blue-White		
2	27	Tip	White-Orange	**066**	**096**
	2	Ring	Orange-White		
—	28	No connection	White-Green	—	—
	3	No connection	Green-White		
—	29	No connection	White-Brown	—	—
	4	No connection	Brown-White		
3	30	Tip	White-Slate	**067**	**097**
	5	Ring	Slate-White		
4	31	Tip	Red-Blue	**068**	**098**
	6	Ring	Blue-Red		
—	32	No connection	Red-Orange	—	—
	7	No connection	Orange-Red		
The following part of the wiring chart applies only to the G8x16 MBM.					
—	33	No connection	Red-Green	—	—
	8	No connection	Green-Red		
5	34	Tip	Red-Brown	**073**	**103**
	9	Ring	Brown-Red		
6	35	Tip	Red-Slate	**074**	**104**
	10	Ring	Slate-Red		
—	36	No connection	Black-Blue	—	—
	11	No connection	Blue-Black		
—	37	No connection	Black-Orange	—	—
	12	No connection	Orange-Black		
7	38	Tip	Black-Green	**075**	**105**
	13	Ring	Green-Black		
8	39	Tip	Black-Brown	**076**	**106**
	14	Ring	Brown-Black		
—	40	No connection	Black-Slate	—	—
	15	No connection	Slate-Black		
The following part of the wiring chart applies to both the G4x16 and G8x16 MBMs.					
. . .	. . .	. . .	. . .	. . .	. . .
—	49	No connection	Violet-Brown	—	—
	24	No connection	Brown-Violet		

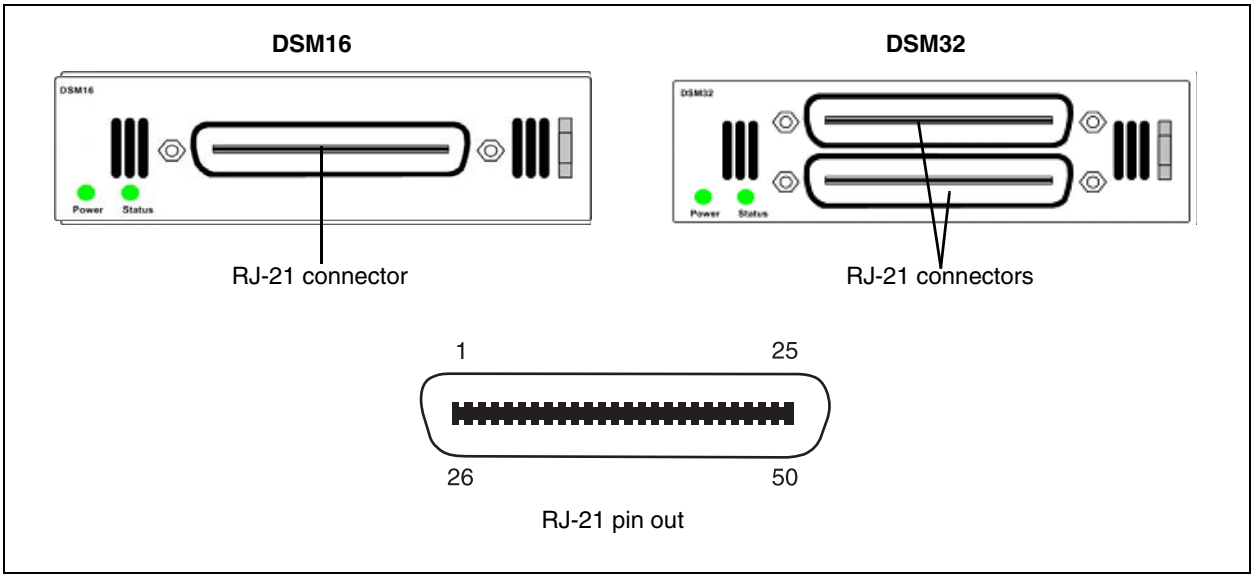
Table 49 G4x16 and G8x16 lower RJ-21 (amphenol) connector wiring for analog PSTN lines (Sheet 2 of 2)

Line	Pin	Connection	Wire color	Default line numbers on Expansion port 1	Default line numbers on Expansion port 2
Aux (see Note)	50	Tip	Violet-Slate	—	—
	25	Ring	Slate-Violet		
Note: The Aux port supports full data speeds. When the line is in use by an analog device, the icon is lit on the phone. If you try to seize the line using the phone, the display shows “in use.” Also, if a power failure occurs, an analog set on line 1 activates (powered by the CO).					

Appendix L
DSM16 and DSM32 wiring charts

Digital deskphones, such as the Business Series Deskphones, connect to the Digital Station Module (DSM16 or DSM32) through the RJ-21 connectors on the front of the media bay module. The DSM16 has a single RJ-21 connector and the DSM32 has two RJ-21 connectors. See the figure DSM16 and DSM32 RJ-21 connectors on page 245.

Figure 97 DSM16 and DSM32 RJ-21 connectors



The table DSM16 and DSM32 RJ-21 connector wiring on page 245 lists the wiring details for the RJ-21 connectors on the DSM16 and DSM32.

Table 50 DSM16 and DSM32 RJ-21 connector wiring (Sheet 1 of 3)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1				Default DN on Expansion port 2			
				DSM16 or Lower DSM32 RJ-21	Port	Upper DSM32 RJ-21	Port	DSM16 or Lower DSM32 RJ-21	Port	Upper DSM32 RJ-21	Port
1	26	Tip	White-Blue	237	501	253	601	269	701	285	801
	1	Ring	Blue-White								
2	27	Tip	White-Orange	238	502	254	602	270	702	286	802
	2	Ring	Orange-White								
3	28	Tip	White-Green	239	503	255	603	271	703	287	803
	3	Ring	Green-White								

Table 50 DSM16 and DSM32 RJ-21 connector wiring (Sheet 2 of 3)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1				Default DN on Expansion port 2			
				DSM16 or Lower DSM32 RJ-21	Port	Upper DSM32 RJ-21	Port	DSM16 or Lower DSM32 RJ-21	Port	Upper DSM32 RJ-21	Port
4	29	Tip	White-Brown	**240**	**504**	**256**	**604**	**272**	**704**	**288**	**804**
	4	Ring	Brown-White								
5	30	Tip	White-Slate	**241**	**505**	**257**	**605**	**273**	**705**	**289**	**805**
	5	Ring	Slate-White								
6	31	Tip	Red-Blue	**242**	**506**	**258**	**606**	**274**	**706**	**290**	**806**
	6	Ring	Blue-Red								
7	32	Tip	Red-Orange	**243**	**507**	**259**	**607**	**275**	**707**	**291**	**807**
	7	Ring	Orange-Red								
8	33	Tip	Red-Green	**244**	**508**	**260**	**608**	**276**	**708**	**292**	**808**
	8	Ring	Green-Red								
9	34	Tip	Red-Brown	**245**	**509**	**261**	**609**	**277**	**709**	**293**	**809**
	9	Ring	Brown-Red								
10	35	Tip	Red-Slate	**246**	**510**	**262**	**610**	**278**	**710**	**294**	**810**
	10	Ring	Slate-Red								
11	36	Tip	Black-Blue	**247**	**511**	**263**	**611**	**279**	**711**	**295**	**811**
	11	Ring	Blue-Black								
12	37	Tip	Black-Orange	**248**	**512**	**264**	**612**	**280**	**712**	**296**	**812**
	12	Ring	Orange-Black								
13	38	Tip	Black-Green	**249**	**513**	**265**	**613**	**281**	**713**	**297**	**813**
	13	Ring	Green-Black								
14	39	Tip	Black-Brown	**250**	**514**	**266**	**614**	**282**	**714**	**298**	**814**
	14	Ring	Brown-Black								
15	40	Tip	Black-Slate	**251**	**515**	**267**	**615**	**283**	**715**	**299**	**815**
	15	Ring	Slate-Black								
16	41	Tip	Yellow-Blue	**252**	**516**	**268**	**616**	**284**	**716**	**300**	**816**
	16	Ring	Blue-Yellow								
—	42	No connection	Yellow-Orange	—		—		—		—	
	17	No connection	Orange-Yellow								
. . .	. . .	. . .	. . .	. . .		. . .		. . .		. . .	

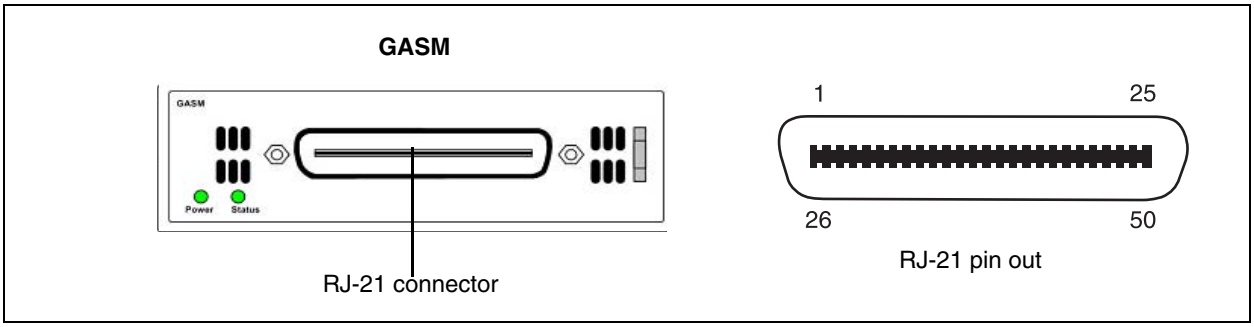
Table 50 DSM16 and DSM32 RJ-21 connector wiring (Sheet 3 of 3)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1				Default DN on Expansion port 2			
				DSM16 or Lower DSM32 RJ-21	Port	Upper DSM32 RJ-21	Port	DSM16 or Lower DSM32 RJ-21	Port	Upper DSM32 RJ-21	Port
—	50	No connection	Violet-Slate	—		—		—		—	
	25	No connection	Slate-Violet								

Appendix M
ASM8, ASM8+, and GASM wiring chart

Analog telephony devices, such as single line deskphones, modems and Fax machines, connect to the Analog Station Module (ASM) through the RJ-21 connector on the front of the media bay module. See the figure ASM RJ-21 connector on page 249.

Figure 98 ASM RJ-21 connector



The table ASM RJ-21 connector wiring on page 249 lists the wiring details for the RJ-21 connector on the ASM.

Table 51 ASM RJ-21 connector wiring (Sheet 1 of 2)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1	Default DN on Expansion port 2
1	26	Tip	White-Blue	**237**	**269**
	1	Ring	Blue-White		
2	27	Tip	White-Orange	**238**	**270**
	2	Ring	Orange-White		
3	28	Tip	White-Green	**239**	**271**
	3	Ring	Green-White		
4	29	Tip	White-Brown	**240**	**272**
	4	Ring	Brown-White		
5	30	Tip	White-Slate	**241**	**273**
	5	Ring	Slate-White		
6	31	Tip	Red-Blue	**242**	**274**
	6	Ring	Blue-Red		
7	32	Tip	Red-Orange	**243**	**275**
	7	Ring	Orange-Red		
8	33	Tip	Red-Green	**244**	**276**
	8	Ring	Green-Red		

Table 51 ASM RJ-21 connector wiring (Sheet 2 of 2)

Set	Pin	Connection	Wire color	Default DN on Expansion port 1	Default DN on Expansion port 2
—	34	No connection	Red-Brown	—	—
	9	No connection	Brown-Red		
. . .	. . .	. . .	. . .	. . .	. . .
—	50	No connection	Violet-Slate	—	—
	25	No connection	Slate-Violet		

Appendix N
Market profile attributes

This section describes some of the differences in the market profile attributes. These attributes are derived from the market profile selected when you configure the system. Each market profile uses a set of system attributes that provide specific functionality for the geographical area in which you deploy the system.

This section covers the following main topics:

- Interface availability on page 251
- Tones and cadences on page 253
- Core parameters for market profiles on page 261
- Analog Trunk parameters on page 276
- GASM8 parameters on page 282
- GASI parameters on page 285
- ATA2 parameters on page 287
- Voicemail on page 290
- ISDN line services on page 293
- Analog and digital trunk types on page 293

Interface availability

Some of the Avaya Business Communications Manager 50 (Avaya BCM50) interfaces are customized for a specific region and are not available to all market profiles. Refer to the following tables for a list of interfaces available within each market profile:

- Analog interface availability by market profile on page 252
- Digital interface availability by market profile on page 252

Analog interfaces

Analog interfaces are not supported in the following market profiles: Denmark, France, Germany, Holland, Italy, Norway, Spain, Sweden, and Switzerland.

The symbols in the table Analog interface availability by market profile on page 252 are defined as follows:

✓ indicates full support. The interface is available and is localized in the market profile.

✸ indicates that functionality and support is limited. The interface is available in the market profile, but is not localized.

Table 52 Analog interface availability by market profile

Market profile	ASM/ ASM8	ASM8+	GASM8	GASI	CTM4/ CTM8	Legacy GATM4/ GATM8	New GATM4/ GATM8	Legacy 4X16	G4x16 G8x16 (new)	GATI	ADID
Australia		✓✸	✓			✓	✓		✓	✓	
Bahrain		✓✸					✓		✓	✓	
Brazil						✓	✓		✓	✓	
CALA					✓✸	✓✸	✓✸	✓✸	✓✸	✓✸	
Canada	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Caribbean			✓	✓	✓	✓	✓	✓	✓	✓	✓
Global	✓✸	✓✸	✓✸	✓✸	✓✸	✓✸	✓✸	✓✸	✓✸	✓✸	
Hong Kong	✓✸	✓✸	✓✸	✓✸	✓✸	✓✸	✓		✓	✓	✓
Ireland							✓		✓	✓	
Mexico			✓✸			✓	✓		✓	✓	
New Zealand		✓✸	✓✸			✓✸	✓		✓	✓	
North America	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Poland	✓✸	✓✸	✓			✓	✓		✓	✓	
PRC					✓✸	✓✸	✓		✓	✓	
Taiwan					✓✸	✓	✓		✓	✓	✓
United Kingdom	✓✸	✓✸	✓			✓	✓		✓	✓	

Digital interfaces

The table Digital interface availability by market profile on page 252 lists the digital interfaces supported in each market profile. Note that the Digital Station Interface and the BRI cNIC are onboard interfaces.

Table 53 Digital interface availability by market profile (Sheet 1 of 2)

Market profile	DSM16+/ DSM32+	Digital station interface	BRI	BRI cNIC	DTM	R2MFC
Australia	✓	✓	✓	✓	✓	
Bahrain	✓	✓	✓	✓	✓	
Brazil	✓	✓	✓		✓	

Table 53 Digital interface availability by market profile (Sheet 2 of 2)

Market profile	DSM16+/ DSM32+	Digital station interface	BRI	BRI cNIC	DTM	R2MFC
CALA	✓	✓	✓		✓	✓
Canada	✓	✓	✓	✓	✓	
Caribbean	✓	✓	✓	✓	✓	
Denmark	✓	✓	✓	✓	✓	
France	✓	✓	✓	✓	✓	
Germany	✓	✓	✓	✓	✓	
Global	✓	✓	✓	✓	✓	✓
Holland	✓	✓	✓	✓	✓	
Hong Kong	✓	✓	✓		✓	
Ireland	✓	✓	✓	✓	✓	
Italy	✓	✓	✓	✓	✓	
Mexico	✓	✓	✓		✓	✓
New Zealand	✓	✓	✓	✓	✓	
North America	✓	✓	✓	✓	✓	
Norway	✓	✓	✓	✓	✓	
Poland	✓	✓	✓	✓	✓	
PRC	✓	✓	✓		✓	
Russia	✓	✓				
South Africa	✓	✓				
Spain	✓	✓	✓	✓	✓	
Sweden	✓	✓	✓	✓	✓	
Switzerland	✓	✓	✓	✓	✓	
Taiwan	✓	✓	✓		✓	
United Kingdom	✓	✓	✓	✓	✓	

Tones and cadences

The following tables provide region-specific settings for tones and cadences.

Note: The sum of two tones is indicated by “A+B”. The sequence of two tones is indicated by “A:B”.

- Localized, Dial, and Quiet Dial on page 254
- Special Dial, Overflow, and Busy on page 255
- Ring Back, Aux Ring, Async Ring Back on page 257
- Hold, Warble, Intrusion on page 258
- Reorder, 1 kHz on page 259

Table 54 Localized, Dial, and Quiet Dial (Sheet 1 of 2)

Market profile	Localized	Dial			Quiet Dial		
		Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Australia	Yes	400	-13	Continuous	400	-21	Continuous
Bahrain	Yes	330+440	-16	Continuous	330+440	-20	Continuous
Brazil	Yes	425	-11.5	Continuous	425	-18	Continuous
CALA	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
Canada	Yes	440+350	-17	Continuous	440+350	-25	Continuous
Caribbean	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
Denmark	Yes	425	-11.5	Continuous	425	-19.5	Continuous
France	Yes	440	-11.5	Continuous	400	-17.5	Continuous
Germany	Yes	425	-11.5	200 ms on 275 ms off 200 ms on 275 ms off 200 ms on 875 ms off	425	-17.5	200 ms on 275 ms off 200 ms on 275 ms off 200 ms on 875 ms off
Global	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
Holland	Yes	425	-11.5	Continuous	425	-19.5	Continuous
Hong Kong	Yes	440+350	-11.5	Continuous	440+350	-17.6	Continuous
Ireland	Yes	425	-14.5	Continuous	425	-17.5	Continuous
Italy	Yes	350+425	-8.5	Continuous	350+425	-17.5	Continuous
Mexico	No (North America)	440+350	-17	Continuous	440+350	-25	Continuous
New Zealand	Yes	400	-13	Continuous	400	-21	Continuous
North America	Yes	440+350	-17	Continuous	440+350	-25	Continuous
Norway	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Poland	Yes	425	-17.5	Continuous	425	-19.5	Continuous
PRC	Yes	450	-11.5	Continuous	450	-17.5	Continuous
Russia	Yes	425	-10	Continuous	425	-13	Continuous
South Africa	Yes	367+400	-17	Continuous	367+400	-25	Continuous
Spain	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Sweden	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Switzerland	Yes	425	-11.5	Continuous	425	-17.5	Continuous
Taiwan	Yes	400	-12	Continuous	400	-20	Continuous

Table 54 Localized, Dial, and Quiet Dial (Sheet 2 of 2)

Market profile	Localized	Dial			Quiet Dial		
		Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
United Kingdom	Yes	440+350	-17.5	Continuous	440+350	-14.5	Continuous

Table 55 Special Dial, Overflow, and Busy (Sheet 1 of 2)

Market profile	Special Dial			Overflow			Busy		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Australia	400	-13	100 ms on 900 ms off	800	-13	100 ms on 100 ms off	425	-13	375 ms on 375 ms off
Bahrain	330+400	-16	100 ms on 900 ms off	425	-16	400 ms on 350 ms off 225 ms on 525 ms off	425	-15	375 ms on 375 ms off
Brazil	425	-11.5	500 ms on 500 ms off	950: 1400: 1800: silence	-18	333 ms: 333 ms: 333 ms: 1s off	425	-11.5	250 ms on 250 ms off
CALA	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Canada	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Caribbean	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Denmark	Silence			950:1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1s off	425	-11.5	250 ms on 250 ms off
France	Silence			950:1400: 1800: silence	-25: -11.5: -25: silence	333 ms: 333 ms: 333 ms: 1 s off	440	-11.5	500 ms on 500 ms off
Germany	Silence			425	-11.5	240 ms on 240 ms off	425	-11.5	150 ms on 475 ms off
Global	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Holland	425	-11.5	500 ms on 50 ms off	950: 1400: 1800: silence	-18	333 ms: 333 ms: 333 ms: 1 s off	425	-11.5	500 ms on 500 ms off
Hong Kong	Silence			480+620	-14.5	500 ms on 500 ms off	480+620	-14.5	500 ms on 500 ms off
Ireland	400:432	-14.5	0.4 s:0.4 s	425	-17.5	450 ms on 450 ms off	425	-17.5	450 ms on 450 ms off
Italy	Silence			425	-8	200 ms on 200 ms off	425	-8	500 ms on 500 ms off
Mexico	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off

Table 55 Special Dial, Overflow, and Busy (Sheet 2 of 2)

Market profile	Special Dial			Overflow			Busy		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
New Zealand	400: silence	-13	0.1 s:0.1 s	400	-11.5	75 ms on 100 ms off 75 ms on 100 ms off 75 ms on 100 ms off 75 ms on 400 ms off	400	-11.5	500 ms on 500 ms off
North America	Silence			480+620	-21	250 ms on 250 ms off	480+620	-21	500 ms on 500 ms off
Norway	Silence			950:1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	500 ms on 500 ms off
Poland	Silence			950:1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-17.5	500 ms on 500 ms off
PRC	Silence			450	-11.5	400 ms on, 400 ms off	450	-11.5	350 ms on 350 ms off
Russia	Silence			425	-10	160 ms on, 160 ms off	425	-10	350 ms on, 350 ms off
South Africa	Silence			400	-21	250 ms on, 250 ms off	400	-21	500 ms on, 500 ms off
Spain	Silence			950:1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	200 ms on 200 ms off
Sweden	425	-11.5	320 ms on 25 ms off	950: 1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	250 ms on 250 ms off
Switzerland	Silence			950: 1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	425	-11.5	500 ms on 500 ms off
Taiwan	Silence			950: 1400: 1800: silence	-25	333 ms: 333 ms: 333 ms: 1.0 s	480+620	-21	500 ms on 500 ms off
United Kingdom	440+350: 440	-17.5	0.75 s:0.75 s	400	-11.5	Continuous	400	-11.5	375 ms on 375 ms off

Table 56 Ring Back, Aux Ring, Async Ring Back (Sheet 1 of 2)

Market profile	Ring Back			Aux Ring			Async Ring Back		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Australia	400+450	-14.5	400 ms on 200 ms off 400 ms on 2 s off	Silence			400+450	-14.5	Continuous
Bahrain	425	-15	400 ms on 200 ms off 400 ms on 2s off	Silence			425	-15	Continuous
Brazil	425	-11.5	1 s on 4 s off	Silence			Silence		
CALA	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Canada	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Caribbean	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Denmark	425	-11.5	1 s on 4 s off	Silence			Silence		
France	440	-11.5	1.5 s on 3.5 s off	Silence			440+450	-14.5	Continuous
Germany	425	-11.5	1 s on 4 s off	Silence			Silence		
Global	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Holland	425	-11.5	1 s on 4 s off	Silence			Silence		
Hong Kong	440+480	-11.5	400 ms on 200 ms off 400 ms on 3 s off	Silence			Silence		
Ireland	400+450	-14.5	400 ms on 200 ms off 400 ms on 2s off	Silence			400+450	-14.5	Continuous
Italy	425	-8	1 s on 4 s off	Silence			Silence		
Mexico	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
New Zealand	400+450	-14.5	400 ms on 200 ms off 400 ms on 2 s off	Silence			440+480	-14.5	Continuous
North America	440+480	-16	2 s on 4 s off	Silence			440+480	-16	2 s on 4 s off
Norway	425	-11.5	1 s on 4 s off	Silence			Silence		
Poland	425	-17.5	1s on 4 s off	Silence			Silence		

Table 56 Ring Back, Aux Ring, Async Ring Back (Sheet 2 of 2)

Market profile	Ring Back			Aux Ring			Async Ring Back		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
PRC	450	-11.5	1s on 4 s off	Silence			Silence		
Russia	425	-10	1 s on, 4 s off	Silence			425	-10	Continuous
South Africa	367+400	-16	400ms on, 200ms off, 400ms on, 2s off	Silence			367+400	-16	Continuous
Spain	425	-11.5	1.5 s on 3 s off	Silence			Silence		
Sweden	425	-11.5	1 s on 5 s off	Silence			Silence		
Switzerland	425	-11.5	1 s on 4 s off	Silence			Silence		
Taiwan	440+480	-21	1 s on 2 s off	Silence			440+480	-21	1 s on 2 s off
United Kingdom	400+450	-14.5	400 ms on 200 ms off 400 ms on 2 s off	Silence			400+450	-14.5	Continuous

Table 57 Hold, Warble, Intrusion (Sheet 1 of 2)

Market profile	Hold			Warble			Intrusion		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Australia	400	-13	Continuous	Silence			425	-13	Continuous
Bahrain	400	-16	Continuous	Silence			400	-16	Continuous
Brazil	425	-11.5	0.5 s on 9.5 s off	Silence			Silence		
CALA	440	-14	Cadenced by CoreTel	Silence			Silence		
Canada	440	-14	Cadenced by CoreTel	Silence			Silence		
Caribbean	440	-14	Cadenced by CoreTel	Silence			Silence		
Denmark	Silence			Silence			425	-11.5	50 ms on 500 ms off
France	400	-11.5	Continuous	Silence			1400	-11.5	Continuous
Germany	425	-11.5	Continuous	Silence			425	-11.5	Continuous

Table 57 Hold, Warble, Intrusion (Sheet 2 of 2)

Market profile	Hold			Warble			Intrusion		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Global	440	-14	Cadenced by CoreTel	Silence			Silence		
Holland	425	-11.5	0.5 s on 9.5 s off	Silence			Silence		
Hong Kong	Silence			Silence			1400	-11.5	Continuous
Ireland	400	-11.5	Continuous	Silence			1400	-11.5	Continuous
Italy	Silence			Silence			425	-12	Continuous
Mexico	440	-14	Cadenced by CoreTel	Silence			Silence		
New Zealand	400	-11.5	Continuous	Silence			1400	-11.5	Continuous
North America	400	-14	Cadenced by CoreTel	Silence			Silence		
Norway	425	-11.5	200 ms on 600 ms off 200 ms on 10 s off	Silence			1400	-11.5	Continuous
Poland	425	-17.5	Continuous	Silence			1400	-25	Continuous
PRC	Silence			Silence			1400	-11.5	Continuous
Russia	425	-10	Continuous	Silence			425	-10	Continuous
South Africa	400	-14	Continuous	Silence			Silence		
Spain	Silence			Silence			1400	-25	Continuous
Sweden	Silence			Silence			1400	-25	0.35s on, 15s off
Switzerland	Silence			Silence			1400	-25	Continuous
Taiwan	440	-14	Continuous	Silence			Silence		
United Kingdom	400	-11.5	Continuous	Silence			1400	-11.5	Continuous

Table 58 Reorder, 1 kHz (Sheet 1 of 3)

Market profile	Reorder			1 kHz		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Australia	425	-13: off: -23: off	375 ms on 375 ms off	N/A		
Bahrain	400	-16	75 ms on 100 ms off 75 ms on 400 ms off	N/A		
Brazil	425	-11.5	250 ms on 250 ms off	N/A		

Table 58 Reorder, 1 kHz (Sheet 2 of 3)

Market profile	Reorder			1 kHz		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
CALA	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Canada	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Caribbean	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Denmark	Silence			N/A		
France	Silence			N/A		
Germany	425	-11.5	240 ms on 240 ms off	N/A		
Global	480+620	- 21	250 ms on 250 ms off	1004	-14	Continuous
Holland	425	-11.5	250 ms on 250 ms off	N/A		
Hong Kong	480+620	-14.5	250 ms on 250 ms off	N/A		
Ireland	200	-11.5: Silence: -17.5: Silence	400 ms on 350 ms off 225 ms on 525 ms off	N/A		
Italy	425	-8	200 ms on 200 ms off	N/A		
Mexico	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
New Zealand	400	-11.5: Silence: -17.5: Silence	400 ms on 350 ms off 225 ms on 525 ms off	N/A		
North America	480+620	-21	250 ms on 250 ms off	1004	-14	Continuous
Norway	425	-11.5	200 ms on 200 ms off	N/A		
Poland	425	-17.5	200 ms on 200 ms off	N/A		
PRC	450	-11.5	700 ms on 700 ms off	N/A		
Russia	Silence			N/A		
South Africa	400	-21	250ms on, 250ms off	N/A		
Spain	425	-11.5	200 ms on 200 ms off 200 ms on 200 ms off 200 ms on 600 ms off	N/A		
Sweden	425	-11.5	250 ms on 750 ms off	N/A		

Table 58 Reorder, 1 kHz (Sheet 3 of 3)

Market profile	Reorder			1 kHz		
	Tones (Hz)	Level per Tone (dBm0)	Cadence	Tones (Hz)	Level per Tone (dBm0)	Cadence
Switzerland	425	-11.5	200 ms on 200 ms off	N/A		
Taiwan	480+620	-21	300 ms on 300 ms off	N/A		
United Kingdom	400	-11.5: Silence: -17.5: Silence	400 ms on 350 ms off 225 ms on 525 ms off	N/A		

Core parameters for market profiles

The core parameters for the available market profiles are provided in the following tables:

- Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters on page 261
- France, Germany, Global, Holland, Hong Kong, and Ireland parameters on page 264
- Italy, Mexico, New Zealand, North America, Norway, and Poland on page 267
- Russia and South Africa parameters on page 270
- PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters on page 273

Table 59 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 1 of 4)

Functionality	Attribute	Market profile						
		Australia	Bahrain	Brazil	CALA	Canada	Caribbean	Denmark
Access codes	Direct dial digit	9	0	9	0	0	0	0
	Dest code for default route	0	9	0	9	9	0	9
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN	ISDN	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	NI-2	NI-2	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102	ETSI-102	NI-2	NI-2	ETSI-102
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	NI-2 DMS100 DMS250 4ESS MCDN	NI-2 DMS100 DMS250 4ESS MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	GATv1 GATv2	GATv2	GATv1 GATv2	GATv1 GATv2	GATv1 GATv2	GATv1 GATv2	N/A

Table 59 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 2 of 4)

Functionality	Attribute	Market profile						
		Australia	**Bahrain**	**Brazil**	**CALA**	**Canada**	**Caribbean**	**Denmark**
Telephony feature settings	Conference tone supported	Yes	No	Yes	Yes	No	Yes	No
	Held line reminder	After 30 seconds	Off	Off	Off	Off	Off	Off
	Delay ring transfer	After 15 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Transfer callback timeout	After 15 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Network callback	30	30	30	30	N/A	30	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000	1000
	Link time (ms)	N/A	600	300	600	600	600	600
	Target line if busy setting	Busy	Prime	Prime	Prime	Prime	Prime	Prime
	BRI ISDN Answer Mode	Manual	Manual	Manual	Manual	Manual	Manual	Manual
System settings	Companding law	A-law	A-law	A-law	A-law	mu-law	mu-law	A-law
	DTI carrier type	E1	E1	E1	E1	T1	T1	E1
	Number of rings in a cycle	2	1	1	1	1	1	1
	M7000 set supported	Yes	Yes	Yes	Yes	No	Yes	Yes
Hunt groups	Mode	Sequential	Broadcast	Broadcast	Broadcast	Broadcast	Broadcast	Broadcast
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout (sec)	60	60	60	60	60	60	60
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone
Service times	Night	Start 17:00 End 08:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00
	Evening	Start 00:00 End 00:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00
	Lunch	Start 00:00 End 00:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00

Table 59 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 3 of 4)

Functionality	Attribute	Market profile						
		Australia	**Bahrain**	**Brazil**	**CALA**	**Canada**	**Caribbean**	**Denmark**
Service modes	Ringing service mode	Off	Off	Off	Off	Off	Off	Off
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off	Off
	Restriction global overrides	000 131440	N/A	190	N/A	N/A	N/A	N/A
	Restriction filter 01	0(013), 1(13, 1800)	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A
	Restriction filter 05	00, 1(13, 11, 1800)	N/A	N/A	N/A	N/A	N/A	N/A
	Restriction filter 06	*	N/A	N/A	N/A	N/A	N/A	N/A
	Routing service mode	Off	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No	No
Public DN	Public DN lengths	Default(7)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 00(17), 1(3), 16(5), 17(4), 18(4)
Public OLI	Unknown number length	N/A	Variable	Variable	Variable	N/A	N/A	Variable
	Local number length	8	Variable	Variable	Variable	7	7	Variable
	National number length	9	Variable	Variable	Variable	10	10	Variable

Table 59 Australia, Brazil, CALA, Canada, Caribbean, and Denmark parameters (Sheet 4 of 4)

Functionality	Attribute	Market profile						
		Australia	**Bahrain**	**Brazil**	**CALA**	**Canada**	**Caribbean**	**Denmark**
Set capabilities	Handsfree	Auto	Auto	Auto	Auto	Auto	Auto	Auto
	Pickup group	1	None	None	None	None	None	None
	Allow redirect	Enabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.								
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	UK English	English French Spanish Turkish	Portuguese English Spanish	Spanish English French	English French Spanish	English French Spanish	Danish English Norwegian Swedish
ONN blocking	Analog VSC (tone)	1831	None	None	None	None	None	None
	Analog VSC (pulse)	1831	None	None	None	None	None	None
	BRI VSC	None	None	None	None	None	None	None
	BRI per loop	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit
Release reason	Release text	Simple	Simple	Simple	None	None	None	Simple
	Release code	On	On	On	Off	Off	Off	On
DTMF parameters	Tone duration (ms)	80	120	120	120	120	120	120
	Pause time (ms)	3.5	1.5	1.5	1.5	1.5	1.5	1.5
	Interdigit time (ms)	100	80	80	80	80	80	80

Table 60 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 1 of 4)

Functionality	Attribute	Market profile					
		France	**Germany**	**Global**	**Holland**	**Hong Kong**	**Ireland**
Access codes	Direct dial digit	9	9	0	0	0	9
	Dest code for default route	0	0	9	9	9	0

Table 60 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 2 of 4)

Functionality	Attribute	Market profile					
		France	**Germany**	**Global**	**Holland**	**Hong Kong**	**Ireland**
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	HKTA2015	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102 + BTNR191
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	HkTA2015 MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	N/A	N/A	GATv1 GATv2	N/A	GATv1 GATv2	GATv1 GATv2
Telephony feature settings	Conference tone supported	No	Yes	No	No	No	Yes
	Held line reminder	Off	Off	Off	Off	Off	Immediate
	Delay ring transfer	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Transfer callback timeout	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Network callback	30	30	30	30	N/A	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000
	Link time (ms)	N/A	N/A	600	600	600	N/A
	Target line if busy setting	PBX > Busy DID > Prime	PBX > Busy DID > Prime	Prime	Prime	Prime	PBX > Busy DID > Prime
	BRI ISDN Answer Mode	Manual	Manual	Manual	Manual	Manual	Auto
System settings	Companding law	A-law	A-law	A-law	A-law	mu-law	A-law
	DTI carrier type	E1	E1	E1	E1	T1	E1
	Number of rings in a cycle	2	2	1	1	1	2
	M7000 set supported	Yes	Yes	Yes	Yes	No	Yes
Hunt groups	Mode	Sequential	Sequential	Broadcast	Broadcast	Broadcast	Sequential
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout (sec)	60	60	60	60	60	60
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00
	Evening	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00
	Lunch	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00

Table 60 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 3 of 4)

Functionality	Attribute	Market profile					
		France	**Germany**	**Global**	**Holland**	**Hong Kong**	**Ireland**
Service modes	Ringing service mode	Manual	Manual	Off	Off	Off	Manual
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off
	Restriction global overrides	N/A	N/A	N/A	N/A	N/A	N/A
	Restriction filter 01	N/A	N/A	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A	00***, 170, 172, 173, 1747, 1760, 1761, 1766, 1770, 1771, 1772, 1775, 1778, 1783, 1788, 900	0(0800), 1
	Restriction filter 05	N/A	N/A	N/A	N/A	N/A	010, 1, 00
	Restriction filter 06	N/A	N/A	N/A	N/A	N/A	*
	Routing service mode	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No
Public DN	Public DN lengths	Default(25)	Default(25)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(7)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 0(11) 00(17), 1(3), 118(6), 9(3)
Public OLI	Unknown number length	Variable	Variable	Variable	Variable	Variable	Variable
	Local number length	Variable	Variable	Variable	Variable	Variable	Variable
	National number length	Variable	Variable	Variable	Variable	Variable	Variable
Set capabilities	Handsfree	Auto	Auto	Auto	Auto	Auto	None
	Pickup group	None	None	None	None	None	None
	Allow redirect	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.							
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	EuroFrench English	German English	English French Spanish Turkish	Dutch English EuroFrench	English French Spanish	UK English

Table 60 France, Germany, Global, Holland, Hong Kong, and Ireland parameters (Sheet 4 of 4)

Functionality	Attribute	Market profile					
		France	**Germany**	**Global**	**Holland**	**Hong Kong**	**Ireland**
ONN blocking	Analog VSC (tone)	None	None	None	None	None	141
	Analog VSC (pulse)	None	None	None	None	None	141
	BRI VSC	None	None	None	None	None	141
	BRI per loop	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SrvcCode
Release reason	Release text	Simple	Detailed	Simple	Simple	None	Detailed
	Release code	On	Off	On	On	Off	Off
DTMF parameters	Tone duration (ms)	120	120	120	120	120	120
	Pause time (ms)	3.5	3.5	1.5	1.5	1.5	3.5
	Interdigit time (ms)	100	100	80	80	80	100

Table 61 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 1 of 4)

Functionality	Attribute	Market profile					
		Italy	**Mexico**	**New Zealand**	**North America**	**Norway**	**Poland**
Access codes	Direct dial digit	9	0	0	0	9	0
	Dest code for default route	0	9	0	9	0	9
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-102 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	NI-2	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102 + BTNR191	NI-2	ETSI-102	ETSI-102
	PRI trunk protocol variants	ETSI-102 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	NI-2 DMS100 DMS250 4ESS MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	N/A	GATv1 GATv2	N/A	GATv1 GATv2	N/A	GATv1 GATv2

Table 61 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 2 of 4)

Functionality	Attribute	Market profile					
		Italy	**Mexico**	**New Zealand**	**North America**	**Norway**	**Poland**
Telephony feature settings	Conference tone supported	Yes	No	Yes	No	No	Yes
	Held line reminder	Off	Off	Immediate	Off	Off	After 30 seconds
	Delay ring transfer	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 15 rings
	Transfer callback timeout	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 15 rings
	Network callback	30	30	30	N/A	30	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000
	Link time (ms)	N/A	600	N/A	600	N/A	N/A
	Target line if busy setting	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime	Busy
	BRI ISDN Answer Mode	Manual	Manual	Auto	Manual	Auto	Manual
System settings	Companding law	A-law	A-law	A-law	mu-law	A-law	A-law
	DTI carrier type	E1	E1	E1	T1	E1	E1
	Number of rings in a cycle	2	1	2	1	2	2
	M7000 set supported	Yes	Yes	Yes	No	Yes	Yes
Hunt groups	Mode	Sequential	Broadcast	Sequential	Broadcast	Sequential	Sequential
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout (sec)	60	60	60	60	60	60
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 08:00
	Evening	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 00:00 End 00:00
	Lunch	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 00:00 End 00:00

Table 61 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 3 of 4)

Functionality	Attribute	Market profile					
		Italy	**Mexico**	**New Zealand**	**North America**	**Norway**	**Poland**
Service modes	Ringing service mode	Manual	Off	Manual	Off	Manual	Off
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off
	Restriction global overrides	N/A	N/A	999 112	N/A	N/A	112 990
	Restriction filter 01	N/A	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0(0800), 1	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A	N/A
	Restriction filter 05	N/A	N/A	010, 1, 00	N/A	N/A	N/A
	Restriction filter 06	N/A	N/A	*	N/A	N/A	N/A
	Routing service mode	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No
Public DN	Public DN lengths	Default(25)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 0(11) 00(17), 1(3), 118(6), 9(3)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(25)	Default(7)
Public OLI	Unknown number length	Variable	Variable	Variable	N/A	Variable	Variable
	Local number length	Variable	Variable	Variable	7	Variable	Variable
	National number length	Variable	Variable	Variable	10	Variable	Variable
Set capabilities	Handsfree	Auto	Auto	None	Auto	Auto	Auto
	Pickup group	None	None	None	None	None	0
	Allow redirect	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.							
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	Italian English	English French Spanish Turkish	UKEnglish	English French Spanish	Norwegian English Swedish Danish	Polish EuroFrench English Czech

Table 61 Italy, Mexico, New Zealand, North America, Norway, and Poland (Sheet 4 of 4)

Functionality	Attribute	Market profile					
		Italy	Mexico	New Zealand	North America	Norway	Poland
ONN blocking	Analog VSC (tone)	None	None	141	None	None	1831
	Analog VSC (pulse)	None	None	141	None	None	1831
	BRI VSC	None	None	141	None	None	None
	BRI per loop	SuprsBit	SuprsBit	SrvcCode	SuprsBit	SuprsBit	SuprsBit
Release reason	Release text	Simple	Simple	Detailed	None	Simple	Simple
	Release code	On	On	Off	Off	On	On
DTMF parameters	Tone duration (ms)	120	120	120	120	120	110
	Pause time (ms)	3.5	1.5	3.5	1.5	3.5	1.5
	Interdigit time (ms)	100	80	100	80	100	80

Table 62 Russia and South Africa parameters (Sheet 1 of 4)

Functionality	Attribute	Market profile	
		Russia	South Africa
Access codes	Direct dial digit	0	9
	Dest code for default route	9	0
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	GATv2	GATv2

Table 62 Russia and South Africa parameters (Sheet 2 of 4)

Functionality	Attribute	Market profile	
		Russia	**South Africa**
Telephony feature settings	Conference tone supported	No	Yes
	Held line reminder	Off	After 30 s
	Delay ring transfer	After 4 rings	After 15 rings
	Transfer callback timeout	After 4 rings	After 15 rings
	Network callback	30	30
	Host delay (ms)	1000	1000
	Link time (ms)	600	N/A
	Target line if busy setting	Prime	Busy
	BRI ISDN Answer Mode	Manual	Auto
	Companding law	A-law	A-law
	DTI carrier type	E1	E1
System settings	Number of rings in a cycle	1	2
	M7000 set supported	Yes	Yes
Hunt groups	Mode	Broadcast	Sequential
	Default delay	4 rings	4 rings
	Queue timeout	60 sec	60 sec
	If busy	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 17:00 End 08:00
	Evening	Start 17:00 End 23:00	Start 00:00 End 00:00
	Lunch	Start 12:00 End 13:00	Start 00:00 End 00:00

Table 62 Russia and South Africa parameters (Sheet 3 of 4)

Functionality	Attribute	Market profile	
		Russia	**South Africa**
Service modes	Ringing service mode	Off	Off
	Ringing service trunk ans	Yes	Yes
	Restriction service mode	Off	Off
	Restriction global overrides	N/A	000 131440
	Restriction filter 01	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0(013), 1(13,1800)
	Restriction filter 05	N/A	00, 1 (13,11,1800)
	Restriction filter 06	N/A	*
	Routing service mode	Off	Off
	Routing service overflow	No	No
Public DN	Public DN lengths	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default (7)
Public OLI	Unknown number length	Variable	N/A
	Local number length	Variable	8
	National number length	Variable	9
Set capabilities	Handsfree	Auto	Auto
	Pickup group	None	1
	Allow redirect	Disabled	Enabled
	Call forward delay	Enabled	Enabled
Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.			
Dial tone detection		Enabled	Enabled
Set preferences	Language (first is default)	English French Spanish Turkish	UIKEnglish

Table 62 Russia and South Africa parameters (Sheet 4 of 4)

Functionality	Attribute	Market profile	
		Russia	**South Africa**
ONN blocking	Analog VSC (tone)	None	1831
	Analog VSC (pulse)	None	1831
	BRI VSC	None	None
	BRI per loop	SuprsBit	SuprsBit
Release reason	Release text	Simple	Simple
	Release code	On	On
DTMF parameters	Tone duration (ms)	120	80
	Pause time (ms)	1.5	3.5
	Interdigit time (ms)	80	100

Table 63 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 1 of 4)

Functionality	Attribute	Market profile					
		PRC	**Spain**	**Sweden**	**Switzerland**	**Taiwan**	**United Kingdom**
Access codes	Direct dial digit	0	9	0	9	0	0
	Dest code for default route	9	0	0	0	9	0
Protocols	Digital trunking protocols	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS	ISDN DASS2 DPNSS
	BRI trunk protocol variants	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ETSI-403 ETSI-QSIG	ITU-T	ETSI-403 ETSI-QSIG
	BRI S-loop protocol variant	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102	ETSI-102 + BTNR191
	PRI trunk protocol variants	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ETSI-403 ETSI-QSIG MCDN	ITU-T MCDN	ETSI-403 ETSI-QSIG MCDN
	Global analog trunk versions	GATv1 GATv2	N/A	N/A	N/A	GATv1 GATv2	GATv1 GATv2

Table 63 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 2 of 4)

Functionality	Attribute	Market profile					
		PRC	**Spain**	**Sweden**	**Switzerland**	**Taiwan**	**United Kingdom**
Telephony feature settings	Conference tone supported	No	No	No	No	No	Yes
	Held line reminder	Off	Off	Off	Off	Off	Immediate
	Delay ring transfer	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Transfer callback timeout	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings	After 4 rings
	Network callback	30	30	30	30	N/A	30
	Host delay (ms)	1000	1000	1000	1000	1000	1000
	Link time (ms)	600	N/A	600	N/A	600	N/A
	Target line if busy setting	Prime	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime	Prime	PBX > Busy DID > Prime
	BRI ISDN Answer Mode	Manual	Auto	Manual	Auto	Manual	Auto
	Companding law	A-law	A-law	A-law	A-law	mu-law	A-law
	DTI carrier type	E1	E1	E1	E1	T1	E1
System settings	Number of rings in a cycle	1	2	1	2	1	2
	M7000 set supported	Yes	Yes	Yes	Yes	Yes	Yes
Hunt groups	Mode	Broadcast	Sequential	Broadcast	Sequential	Broadcast	Sequential
	Default delay	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles	4 ring cycles
	Queue timeout	60 sec	60 sec	60 sec	60 sec	60 sec	60 sec
	If busy	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone	Busy tone
Service times	Night	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00	Start 23:00 End 07:00
	Evening	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00	Start 17:00 End 23:00
	Lunch	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00	Start 12:00 End 13:00

Table 63 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 3 of 4)

Functionality	Attribute	Market profile					
		PRC	**Spain**	**Sweden**	**Switzerland**	**Taiwan**	**United Kingdom**
Service modes	Ringing service mode	Off	Manual	Off	Manual	Off	Manual
	Ringing service trunk ans	Yes	Yes	Yes	Yes	Yes	Yes
	Restriction service mode	Off	Off	Off	Off	Off	Off
	Restriction global overrides	N/A	N/A	N/A	N/A	N/A	999 112
	Restriction filter 01	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	N/A	N/A	N/A	0, 1(1800, 1866, 1877, 1888), 911(911), 411, 976, 1976, 1***976, 1900, 1***900, 5551212	0(0800), 1
	Restriction filter 05	N/A	N/A	N/A	N/A	N/A	010, 1, 00
	Restriction filter 06	N/A	N/A	N/A	N/A	N/A	*
	Routing service mode	Off	Off	Off	Off	Off	Off
	Routing service overflow	No	No	No	No	No	No
Public DN	Public DN lengths	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(25)	Default(11), 00(17), 01(10), 02(10), 020(9), 0200(10), 02000(7), 020000(10), 0201(10), 02010(9), 07(10), 071(11), 0718(10), 072(11), 077(11), 09(11), 1(3)	Default(25)	Default(7), 0(11), 00(12), 01(17), 011(18), 1(11), 411(3), 911(3)	Default(8), 0(11) 00(17), 1(3), 118(6), 9(3)
Public OLI	Unknown number length	Variable	Variable	Variable	Variable	Variable	Variable
	Local number length	Variable	Variable	Variable	Variable	Variable	Variable
	National number length	Variable	Variable	Variable	Variable	Variable	Variable
Set capabilities	Handsfree	Auto	Auto	Auto	Auto	Auto	None
	Pickup group	None	None	None	None	None	None
	Allow redirect	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
	Call forward delay	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)	Disabled (4)

Note: The field for number of rings is hidden in default mode (disabled). When you enter a value for call forward delay, the field for number of rings becomes visible with the given default value.

Table 63 PRC, Spain, Sweden, Switzerland, Taiwan, and United Kingdom parameters (Sheet 4 of 4)

Functionality	Attribute	Market profile					
		PRC	Spain	Sweden	Switzerland	Taiwan	United Kingdom
Dial tone detection		Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
Set preferences	Language (first is default)	English French Spanish Turkish	EuroSpanish English Portuguese	Swedish English Norwegian Danish	German English EuroFrench Italian	English French Spanish	UKEnglish
ONN blocking	Analog VSC (tone)	None	None	None	None	None	141
	Analog VSC (pulse)	None	None	None	None	None	141
	BRI VSC	None	None	None	None	None	141
	BRI per loop	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SuprsBit	SrvcCode
Release reason	Release text	Simple	Simple	Simple	Simple	Simple	Detailed
	Release code	On	On	On	On	On	Off
DTMF parameters	Tone duration (ms)	120	120	120	120	120	120
	Pause time (ms)	1.5	3.5	1.5	3.5	1.5	3.5
	Interdigit time (ms)	80	100	80	100	80	100

Analog Trunk parameters

The table Localization, PSTN standards, and pulse dialing parameters on page 277 contains information for the onboard GATI interface, the G4x16/G8x16 MBM (NT5B42AAABE5/ NT5B42AAACE5), the new GATM4/8 MBM (NT5B44BAABE5/NT5B44AAABE5), and the legacy GATM4/8 MBM (NT5B44BAAA/NT5B44AAAA) in a BCM50R3 system. Differences between the interfaces are noted in this table. The 4x16 (NT5B42AAAA) and CTM4/8 MBMs are not covered in this table.

Global analog trunks are not supported in the following market profiles: Denmark, France, Germany, Holland, Italy, Norway, Spain, Sweden, and Switzerland.

The analog trunk parameters are provided in the following tables:

- Localization, PSTN standards, and pulse dialing parameters on page 277
- Transmission parameters on page 279
- Call supervision parameters on page 280
- On-hook caller ID, disconnect supervision, and message waiting parameters on page 281

Table 64 Localization, PSTN standards, and pulse dialing parameters (Sheet 1 of 3)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Australia	Yes	None	[1] AS/ACIF S003:2005 (2nd Edition) — Customer Access Equipment for Connection to a Telecommunications Network [2] AS/ACIF S002:2001 — Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network	66	34	860
Bahrain	Yes	Legacy GATM4/8 NOT supported (will not function)	[1] Bahrain PSTN Specification [2] Si3050 Global Voice/Data Direct Access Arrangement Specification [3] AN84 Digital Hybrid with the Si305X DAAS Specification [4] ETSI ETS 300 659-1 Public Switched Telephone Network (PSTN), Subscriber line protocol over the local loop for display (and related) services. Part 1: On hook data transmission.	25	17	700
Brazil	Yes	DTMF CLID NOT supported on GATI or Legacy GATM4/8	[1] Identification of the Calling Party for SPC With DTMF, 220-250-713. [2] Si3050 Global Voice/Data Direct Access Arrangement Specification.	66	34	800
CALA	No (North American based A-law)	None	N/A	60	40	700
Canada	Yes	None	N/A	60	40	700
Caribbean	Yes	None	N/A	60	40	700
Global	No (North American based A-Law)	None	N/A	60	40	700
Hong Kong	Yes	Line Reversal NOT supported on Legacy GATM4/8	[1] General Technical Characteristics of Fixed Telecommunications Networks in Hong Kong, HKTA 2201, Issue 4, April 2003. [2] Network Connection Specification for Connection of Customer Premises Equipment (CPE) to Direct-Dial-In (DDI) Line of the Public Switched Telephone Network (PSTN) in Hong Kong, HKTA 2013, Issue 3, February 2003. [3] Si3050 Global Voice/Data Direct Access Arrangement Specification. [4] AN84 Digital Hybrid with the Si305X DAAS Specification.	66	33	600

Table 64 Localization, PSTN standards, and pulse dialing parameters (Sheet 2 of 3)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Ireland	Yes	Legacy GATM4/8 NOT supported (will not function)	[1] Eircom PSTN Interface Specification, Eircom document reference R452 NPD00, Revision: 1.1, 21/7/2000 [2] Si3050 Global Voice/Data Direct Access Arrangement Specification. [3] ETSI ETS 300 659-1 Public Switched Telephone Network (PSTN), Subscriber line protocol over the local loop for display (and related) services. Part 1: On hook data transmission.	66	34	1000
Mexico	Yes	None	[1] Mexico general Specification, June 9, 1993	60	40	700
New Zealand	No (UK-based telephony with Australian tones)	None	[1] PABX External Port Interface Requirements PTC 107: 1989 ISSUE 1. [2] Specification PTC 200 Requirements for Connection of Customer Equipment to Analogue Lines. [3] PTC220 Requirements for Private Voice Networks connected to the PSTN/ISDN DRAFT FOR COMMENT 12 February 2003. [4] The document “TNA 102: June 1996". [5] The document “TNA102 - Amendment to Section 10 and new Section 12.pdf”.	66	34	740
North America	Yes	None	[1] TIA/EIA-716: Telecommunications Telephone Terminal Equipment – Type 1 Caller Identity Equipment Performance Requirements. [2] AN84 – Digital Hybrid with the Si3050 DAA. [3] si3050.pdf	60	40	700
Poland	Yes	None	[1] Polish ASS_1_v1.doc [2] ITU-T Telecommunication Standardization Sector of ITU Supplement2 Series E 01/94	66	33	700
PRC	Yes	DTMF CLID NOT supported on GATI or Legacy GATM4/8	[1] Feature Description and Detailed Design Description documents of the existing GATI firmware [2] AN84 Digital Hybrid with the Si305x DAAs.pdf [3] si3050.pdf [4] Chapter-8-done.doc [5] PRC Fixed Telephone Network Caller Identity Delivery (YDT1277.1-2003).doc [6] PRC Ringing and Tone for Telephone Automatic Switching Network (GB3380-82).doc	34	66	700

Table 64 Localization, PSTN standards, and pulse dialing parameters (Sheet 3 of 3)

Market profile	Localized	Differences between GATI, G4x16/G8x16, New GATM4/8, and Legacy GATM4/8	PSTN Standards, Specifications Referenced	Pulse Dialing (ms)		
				Break time	Make time	Interdigit time
Russia	Yes	Legacy GATM4/8 not supported	[1] OGSTFS – Russian PSTN specs [2] si3050.pdf [3]AN84 Digital Hybrid with the Si305x DAAs.pdf	60	67	60
South Africa	Yes	Legacy GATM4/8 not supported	[1]S_Africa_Specs.pdf [2]ICASA TE-010.doc [3] si3050.pdf [4]AN84 Digital Hybrid with the Si305x DAAs.pdf	40	33	40
Spain	Yes	Legacy GATM4/8 not supported	[1]M1_Analogue_Trunk_Card_Spain.pdf [2]Public Switched Telephone Network Analogue Line interface specification “Interfaz_de_telefonica_de_Espa_a-v5_Eng.doc” [3] si3050.pdf [4]AN84 Digital Hybrid with the Si305x DAAs.pdf	600	950	200
Taiwan	Yes	None	[1] Technical Specifications for Terminal Equipment for Connection to Public Switched Telephone Network, PSTN01, September 27, 2001	66	33	800
United Kingdom	Yes	None	[1] BT Public Switched Telephone Network (PSTN): SIN352 [2] BT Public Switched Telephone Network (PSTN): SIN227 +AC7 [3] BT Public Switched Telephone Network (PSTN): SIN242 [4] AN84 – Digital Hybrid with the Si3050 DAA [5] Si3050/Si3019 Global Voice/Data Direct Access Arrangement	66	34	740

Table 65 Transmission parameters (Sheet 1 of 2)

Market profile	Transmission				
	PCM coding scheme	AC impedance	Loop length adjustment capability	Tx CO gain (short, medium, long)	Rx CO gain (short, medium, long)
Australia	A-law	220 Ω + (820 Ω || 120 nF)	No	(N/A, 0, N/A)	(N/A, 6 dB, N/A)
Bahrain	A-law	900 Ω + 2.16 uF	Yes	(0, 3 dB, 3 dB)	(3, 3 dB, 6 dB)
Brazil	A-law	600 Ω/900 Ω	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
CALA	A-law	600 Ω	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Canada	mu-law	600 Ω	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Caribbean	mu-law	600 Ω	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Global	A-law	600 Ω	Yes	(0, 3 dB, 3 dB)	(3 dB, 3 dB, 6 dB)

Table 65 Transmission parameters (Sheet 2 of 2)

Market profile	Transmission				
	PCM coding scheme	AC impedance	Loop length adjustment capability	Tx CO gain (short, medium, long)	Rx CO gain (short, medium, long)
Hong Kong	mu-law	600 Ω	No	(N/A, 0, N/A)	(N/A, 6 dB, N/A)
Ireland	A-law	270 Ω + (750 Ω||150 nF)	Yes	(0, 3 dB, 3 dB)	(3 dB, 3 dB, 6 dB)
Mexico	A-law	600 Ω	Yes	(0, 3 dB, 3 dB)	(3 dB, 3 dB, 6 dB)
New Zealand	A-law	320 Ω + (1050 Ω || 230 nF)	No	(N/A, 3 dB, N/A)	(N/A, 3 dB, N/A)
North America	mu-law	600 Ω	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Poland	A-law	600 Ω	No	(N/A, 3 dB, N/A)	(N/A, 3 dB, N/A)
PRC	A-law	600 Ω	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
Russia	A-law	600 Ω	Yes		
South Africa	A-law	220 Ω + (820 Ω || 115 nF)	No		
Spain	A-law	270 Ω + (750 Ω || 150 nF)	No		
Taiwan	u-law	600 Ω	Yes	(-3 dB, 0, 0)	(0, 0, 3 dB)
United Kingdom	A-law	320 Ω + (1050 Ω || 230 nF)	No	(N/A, 3 dB, N/A)	(N/A, 3 dB, N/A)

Table 66 Call supervision parameters (Sheet 1 of 2)

Market profile	Call supervision				
	Link/flash time (ms)	OSI time (ms)	Force on-hook time (ms)	Wetting time (ms)	Ring confirmation count (ms)
Australia	100	100	1600	0	150
Bahrain	600	100	1600	N/A	256
Brazil	300	100	2000	N/A	256
CALA	600	100	1500	N/A	256
Canada	600	100	1600	N/A	256
Caribbean	600	100	1600	N/A	256
Global	600	100	1500	N/A	256
Hong Kong	500	100	1000	N/A	256
Ireland	150	100	2000	N/A	200
Mexico	600	100	1600	N/A	256
New Zealand	90	100	1600	15	200
North America	600	100	1600	N/A	256
Poland	500	500	1800	N/A	256
PRC	600	100	1600	N/A	256
Russia	100	100	400	0	256

Table 66 Call supervision parameters (Sheet 2 of 2)

Market profile	Call supervision				
	Link/flash time (ms)	OSI time (ms)	Force on-hook time (ms)	Wetting time (ms)	Ring confirmation count (ms)
South Africa	100	100	1600	0	256
Spain	120	100	1600	0	256
Taiwan	600	100	1600	0	256
United Kingdom	90	100	1600	15	200

Table 67 On-hook caller ID, disconnect supervision, and message waiting parameters (Sheet 1 of 2)

Market profile	On-hook caller ID		Disconnect supervision			Message waiting		
	FSK	DTMF (Start Digit, Stop Digit)	OSI	Busy tone	Line reversal	FSK	Voltage reversal	Stutter dial tone
Australia	Bellcore	Not supported	No	No	ROI and ROA	Supported	Not supported	Not supported
Bahrain	ETSI	Not supported	No	Supported (425 ±10% Hz, 380 ±10% on/ 380 ±10%off)	No	Supported	Not supported	Not supported
Brazil	Not supported	Supported (A,C). NOTE: Not Supported on GATI or Legacy GATM4/8	No	Supported (425 ± 25 Hz, 250 ms On / 250 ms Off ± 10%)	No	Supported	Not supported	Not supported
CALA	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Canada	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Caribbean	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Global	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Hong Kong	Bellcore	Not supported	No	Supported (480 ± 10 Hz and 620 ± 10 Hz, 500 ± 100 ms On / 500 ± 80 ms Off)	Yes (NOT supported on Legacy GATM4/8)	Supported	Not supported	Not supported
Ireland	ETSI	Not supported	No	Supported (425 Hz ± 25%, 450 ms On/ 450 ms Off ± 23%)	No	Supported	Not supported	Not supported
Mexico	ETSI	Not supported	No	Supported (425 Hz, 250 ms On/ 250 ms Off)	No	Supported	Not supported	Not supported

Table 67 On-hook caller ID, disconnect supervision, and message waiting parameters (Sheet 2 of 2)

Market profile	On-hook caller ID		Disconnect supervision			Message waiting		
	FSK	DTMF (Start Digit, Stop Digit)	OSI	Busy tone	Line reversal	FSK	Voltage reversal	Stutter dial tone
New Zealand	ETSI	Not supported	Yes (500 ms UK Guarded Clear)	No	No	Supported	Not supported	Not supported
North America	Bellcore	Not supported	Yes	No	No	Supported	Not supported	Not supported
Poland	ETSI	Not supported	No	Supported in unsupervised mode (425 Hz, 500 ms On/ 500 ms Off)	Supported in supervised mode	Supported	Not supported	Not supported
PRC	Bellcore	Supported (A/C) NOTE: Not Supported on GATI or Legacy GATM4/8	No	Supported (450 ± 25 Hz, 350 ms On/350 ms Off ± 10%)	No	Supported	Not supported	Not supported
Russia	ETSI	Not supported	No	Supported (425 ± 50 Hz, 400 ms On/400 ms Off ± 100ms)	No	Supported	Not Supported	Not Supported
South Africa	ETSI	Not supported	No	Supported in Supervised Mode (400 ± 25 Hz, 500 ms On/500 ms Off ± 100ms)	Yes (Supported in Supervised mode)	Supported	Not Supported	Not Supported
Spain	ETSI	Not supported	No	No	Yes (Supported in Supervised mode)	Supported	Not Supported	Not Supported
Taiwan	ETSI	Supported (D, C)	No	Supported (480 + 620 Hz, 500 ms On/ 500 ms Off)	No	Supported	Not supported	Not supported
United Kingdom	ETSI	Not supported	Yes (500 ms UK Guarded Clear)	No	No	Supported	Not supported	Not supported

GASM8 parameters

This section contains information for the GASM8 MBM.

Global analog stations are not supported in the following market profiles: Brazil, CALA, Denmark, France, Germany, Holland, Italy, Norway, PRC, Spain, Sweden, Switzerland, and Taiwan.

The GASM8 parameters are provided in the following tables:

- Localization, DIP switch settings, specifications, and transmission parameters on page 283
- Loop interface and call supervision parameters on page 284
- Dial pulse and DTMF parameters on page 284
- MWI, On-hook Caller Id, Disconnect Supervision on page 285

Table 68 Localization, DIP switch settings, specifications, and transmission parameters

Market profile	Localized	DIP switch setting	Specifications	Transmission		
			Standards used	Terminal Input impedance	Nominal Network Input Impedance	PCM coding scheme
Australia	Yes	Australia	TS 003 TCE2	220 Ω + (820 Ω || 120 nF)	220 Ω + (820 Ω || 120 nF)	A-law
Bahrain	No (North American Based A-Law)	North America	N/A	600 Ω	600 Ω	A-law
Canada	Yes	North America	Refer to North America Specs	600 Ω	600 Ω	mu-law
Caribbean	Yes	North America	Refer to North America Specs	600 Ω	600 Ω	mu-law
Global	No (North American based A-law)	North America	N/A	600 Ω	600 Ω	A-law
Hong Kong	No (North American based mu-law)	North America	N/A	600 Ω	600 Ω	mu-law
Ireland	No (UK-Based)	UK	N/A	370 Ω + (620 Ω || 310 nF)	300 Ω + (1000 Ω || 220 nF)	A-Law
Mexico	No (North American based A-law)	North America	N/A	600 Ω	600 Ω	A-law
New Zealand	No (UK-based telephony with Australian tones)	UK	N/A	370 Ω + (620 Ω || 310 nF)	300 Ω + (1000 Ω || 220 nF)	A-law
North America	Yes	North America	EIA/TIA-464A CS-03 Part I T512.1 T512.2	600 Ω	600 Ω	mu-law
Poland	Yes	Poland	[1] Polish ASS_1_v1.doc 2] Technical Requirements for Private Automatic Branch Exchanges. Reference Analog interfaces11.doc	600 Ω	600 Ω	A-law
United Kingdom	Yes	UK	BS 6450 Part 4 BTNR 1080 EN 41003 AnnexD BS 6305 BTNR 315	370 Ω + (620 Ω || 310 nF)	300 Ω + (1000 Ω || 220 nF)	A-law

Table 69 Loop interface and call supervision parameters

	Loop interface				Call supervision				
Market profile	Ringing frequency (Hz)	Ringing amplitude (Vrms)	Loop Current Detect Threshold (mA)	Loop current limit (mA)	Min. seize duration (ms)	Min answer duration (ms)	Min/max recall duration (ms)	Min clear duration (ms)	Disconnect Supervision OSI Time (ms)
Australia	25	65	18	32	200	50	30/150	1500	800
Bahrain	20	65	18	32	150	25	250/1100	1400	850
Canada	20	65	18	32	150	25	250/1100	1400	850
Caribbean	20	65	18	32	150	25	250/1100	1400	850
Global	20	65	18	32	150	25	250/1100	1400	850
Hong Kong	20	65	18	32	150	25	250/1100	1400	850
Ireland	25	65	18	32	200	50	15/150	1500	850
Mexico	20	65	18	32	150	25	250/1100	1400	850
New Zealand	25	65	18	32	200	50	15/150	1500	850
North America	20	65	18	32	150	25	250/1100	1400	850
Poland	25	65	18	32	180	80	75/520	680	800
United Kingdom	25	65	18	32	200	50	15/150	1500	850

Table 70 Dial pulse and DTMF parameters

	Dial pulse				DTMF	
Market profile	Dial pulse coding scheme	Min/max break duration (ms)	Min/max make duration (ms)	Min interdigit pause duration (ms)	DTMF coding scheme (digits)	Min DTMF detect level (dB)
Australia	N	40/90	20/60	300	16	-36
Bahrain	N	25/120	10/90	250	12	-36
Canada	N	25/120	10/90	250	12	-36
Caribbean	N	25/120	10/90	250	12	-36
Global	N	25/120	10/90	250	12	-36
Hong Kong	N	25/120	10/90	250	12	-36
Ireland	N	15/200	15/200	200	16	-36
Mexico	N	25/120	10/90	250	12	-36
New Zealand	N	15/200	15/200	200	16	-36
North America	N	25/120	10/90	250	12	-36
Poland	N	44/88	25/48	400	12	-36
United Kingdom	N	15/200	15/200	200	16	-36

Table 71 MWI, On-hook Caller Id, Disconnect Supervision

Market profile	MWI				On-hook Caller Id	Disconnect Supervision		
	High Voltage (HV)	Line Reversal (LR)	Tone	Class MWI	FSK support	OSI	Busy Tone	Line Reversal
Australia	Supported 110 V	Not supported	Supported	Not supported	Yes - AUSTEL TS 030	Supported	Not supported	Not supported
Bahrain	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Canada	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Caribbean	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Global	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Hong Kong	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Ireland	Not supported	Supported	Supported	Not supported	Yes - BT-SIN227	Supported	Not supported	Not supported
Mexico	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
New Zealand	Not supported	Supported	Supported	Not supported	Yes - BT-SIN227	Supported	Not supported	Not supported
North America	Supported 120 V	Not supported	Supported	Not supported	Yes - Bellcore	Supported	Not supported	Not supported
Poland	Supported 110 V	Not supported	Supported	Not supported	Yes - ETSI	Supported	Not supported	Not supported
United Kingdom	Not supported	Supported	Supported	Not supported	Yes - BT-SIN227	Supported	Not supported	Not supported

GASI parameters

This section contains information for the onboard GASI interface.

GASI interfaces are not supported in the following market profiles: Australia, Bahrain, Brazil, CALA, Denmark, France, Germany, Holland, Ireland, Italy, Mexico, New Zealand, Norway, Poland, PRC, Spain, Sweden, Switzerland, Taiwan, UK.

Note that the GASI currently has not been localized for markets except North America. The GASI will function in some profiles outside of North America; however, the interface will respond with North American characteristics.

The GASI parameters are provided in the following tables.

Table 72 GASI parameters (Sheet 1 of 2)

Aspect	Parameter	Market Profile				
		Canada	**Caribbean**	**Global**	**Hong Kong**	**North America**
Market Support	Localized?	Yes	Yes	No (North American Based A-Law)	No (North American Based A-Law)	Yes
Transmission	Terminal Input Impedance	600 Ω	600 Ω	600 Ω	600 Ω	600 Ω
	Nominal Network Input Impedance	600 Ω	600 Ω	600 Ω	600 Ω	600 Ω
	PCM Coding Scheme	mu-Law	mu-Law	A-Law	mu-Law	mu-Law
Loop Interface	Ringing Frequency (Hz)	20	20	20	20	20
	Ringing Amplitude (Vrms)	63	63	63	63	63
	Loop Current Detect Threshold (mA)	10.16	10.16	10.16	10.16	10.16
	Loop Current Limit (mA)	26	26	26	26	26
Call Supervision	Minimum Seize Duration (ms)	200	200	200	200	200
	Minimum Answer Duration (ms)	10	10	10	10	10
	Minimum/Maximum Recall Duration (ms)	250/1100	250/1100	250/1100	250/1100	250/1100
	Minimum Clear Duration (ms)	1400	1400	1400	1400	1400
	Disconnect Supervision OSI Time (ms)	800	800	800	800	800
Dial Pulse	Dial Pulse Coding Scheme	N	N	N	N	N
	Minimum/Maximum Break Duration (ms)	25/120	25/120	25/120	25/120	25/120
	Minimum/Maximum Make Duration (ms)	10/90	10/90	10/90	10/90	10/90
	Minimum Interdigit Pause Duration (ms)	250	250	250	250	250
DTMF	DTMF Coding Scheme (digits)	16	16	16	16	16
	Min DTMF Detect Level (A) (dBm)	-27	-27	-27	-27	-27
MWI	HIgh Voltage (HV)	Supported - 95V	Supported - 95V	Supported - 95V	Supported - 95V	Supported - 95V
	Line Reversal (LR)	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
	Tone	Supported	Supported	Supported	Supported	Supported
	Class MWI	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
On-hook Caller ID	FSK Support	Yes - Bellcore	Yes - Bellcore	Yes - Bellcore	Yes - Bellcore	Yes - Bellcore

Table 72 GASI parameters (Sheet 2 of 2)

Aspect	Parameter	Market Profile				
		Canada	Caribbean	Global	Hong Kong	North America
DIsconnect Supervision	OSI	Supported	Supported	Supported	Supported	Supported
	Busy Tone	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
	Line Reversal	Not Supported	Not Supported	Not Supported	Not Supported	Not Supported
Specifications	Standards used	Refer to North America Specs	Refer to North America Specs	N/A	N/A	EIA/TIA-464A CS-03 Part I T512.1 T512.2

ATA2 parameters

This section contains information for the ATA2 device. The ATA2 is either DR6 or DR7 mode. The mode is determined by the region in which you are located, and is not a modifiable user preference. Refer to the following tables for a list of parameters in each mode.

- ATA2 DR6 Market Support, Transmission, Loop Interface, Call Supervision, and Dial Pulse parameters on page 287
- ATA2 DR7 Market Support, Transmission and Loop Interface parameters on page 289
- ATA2 DR7 Call Supervision, Dial Pulse, and DTMF parameters on page 290

ATA2 DR6

Table 73 ATA2 DR6 Market Support, Transmission, Loop Interface, Call Supervision, and Dial Pulse parameters (Sheet 1 of 2)

Market profile	Market Support	Transmission	Loop Interface	Call Supervision		Dial Pulse		
				Duration (ms)		Dial Pulse Coding Scheme	Duration (ms)	
	Localized?	Terminal Input Impedance	Ringing Frequency (Hz)	Min/ Max Recall	Min Clear		Min/ Max Break	Min/ Max Make
Australia	Yes	220 Ω + (820 Ω ll 120 nF)	25	10/150	310	N	20/125	10/230
Bahrain	No (North American Based A-Law)	600 Ω	20	290/1010	1500	N	20/130	15/130
Canada	Yes	600 Ω	20	290/1010	1500	N	20/130	15/130
Caribbean	Yes	600 Ω	20	290/1010	1500	N	20/130	15/130
Global	No (North American Based A-Law)	600 Ω	20	290/1010	1500	N	20/130	15/130
Hong Kong	No (North American Based mu-Law)	600 Ω	20	290/1010	1500	N	20/130	15/130

Table 73 ATA2 DR6 Market Support, Transmission, Loop Interface, Call Supervision, and Dial Pulse parameters (Sheet 2 of 2)

Market profile	Market Support	Transmission	Loop Interface	Call Supervision		Dial Pulse		
				Duration (ms)		Dial Pulse Coding Scheme	Duration (ms)	
	Localized?	Terminal Input Impedance	Ringing Frequency (Hz)	Min/ Max Recall	Min Clear		Min/ Max Break	Min/ Max Make
Ireland	No (UK based)	300 Ω + (1000 Ω || 220 nF)	25	10/150	310	N	20/125	10/230
Mexico	No (North American Based A-Law)	600 Ω	20	290/1010	1500	N	20/130	15/130
New Zealand	No (UK Based)	300 Ω + (1000 Ω || 220 nF)	25	10/150	310	N	20/125	10/230
North America	Yes	600 Ω	20	290/1010	1500	N	20/130	15/130
PRC	No (North American Based A-Law)	600 Ω	20	290/1010	1500	N	20/130	15/130
Taiwan	No (North American Based mu-Law)	600 Ω	20	290/1010	1500	N	20/130	15/130
United Kingdom	Yes	300 Ω + (1000 Ω || 220 nF)	25	10/150	310	N	20/125	10/230

ATA2 DR7

Table 74 ATA2 DR7 Market Support, Transmission and Loop Interface parameters

Market profile	Market Support	Transmission		Loop Interface			
	Localized?	Terminal Input Impedance	PCM Coding Scheme	Ringing Frequency (Hz)	Ringing Amplitude (Vrms)	Loop Current Detect Threshold (mA)	Loop Current Limit (mA)
Brazil	Yes	900 Ω	A-Law	25	75	18	85
CALA	Yes	900 W	A-Law	25	75	18	85
Denmark	Yes	300 Ω + (1000 Ω || 220 nF)	A-Law	25	75	12	85
France	Yes	210 Ω + (1020 Ω || 140 nF)	A-Law	25	75	6	65
Germany	Yes	220 Ω + (820 Ω || 110 nF)	A-Law	25	75	6	55
Holland	Yes	300 Ω + (1000 Ω || 220 nF)	A-Law	25	75	12	55
Italy	Yes	180Ω + (620 Ω || 62 nF)	A-Law	25	75	6	23
Norway	Yes	120 Ω + (840 Ω || 110 nF)	A-Law	25	75	12	85
Poland	Yes	220 Ω + (820 Ω || 120 nF)	A-Law	50	80	18	40
Spain	Yes	220 Ω + (820 Ω || 120 nF)	A-Law	25	75	6	55
Sweden	Yes	200 Ω + (1000 Ω || 200 nF)	A-Law	25	75	12	30
Switzerland	Yes	220 Ω + (820 Ω || 120 nF)	A-Law	25	75	6	55

Table 75 ATA2 DR7 Call Supervision, Dial Pulse, and DTMF parameters

Market profile	Call Supervision				Dial Pulse				DTMF	
	Duration (ms)					Duration (ms)				
	Min Seize	Min Answer	Min/Max Recall	Min Clear	Dial Pulse Coding Scheme	Min/ Max Break	Min/ Max Make	Min Interdigit Pause	DTMF Coding Scheme (digits)	Min DTMF Detect Level (A) (dBm0)
Brazil	200	50	250/1100	750	N	40/90	15/55	250	16	-25
CALA	200	50	250/1100	750	N	40/90	15/55	250	16	-25
Denmark	200	50	80/140	750	N	15/200	15/200	200	16	-25
France	140	50	220/320	225	N	60/75	25/40	800	16	-25
Germany	150	50	80/120	225	N	50/70	30/50	650	16	-25
Holland	200	50	90/130	750	N	30/70	25/80	400	16	-25
Italy	150	50	80/140	225	N	50/70	30/50	700	16	-25
Norway	200	50	80/150	750	N	30/70	25/80	400	16	-40
Poland	200	50	25/150	750	N	40/90	20/60	300	16	-25
Spain	150	50	80/140	225	N	60/75	25/40	450	16	-25
Sweden	200	50	30/150	125	N+1	30/70	25/80	450	16	-28
Switzerland	150	50	80/140	225	N	50/70	30/50	350	16	-25

Voicemail

The following voicemail parameter values are the same for all countries

- AMIS Address Start Key: #
- Country Key Language Toggle: 9
- Country Key Operator Revert: 0
- Maximum CLID Entry: 16
- Maximum Network DN Length: 16
- Maximum Packet Network DN Length: 8
- Broadcast Key Event: 9

See the table Voicemail parameters, by country on page 291for the remaining voicemail parameters.

Table 76 Voicemail parameters, by country (Sheet 1 of 2)

Market	Country Login Mailbox Key	Alternate QZ Mapping	Default Language	Enable Touch Tone Gate	Local Number Length	Maximum CLID Display	National Number Length
Argentina	8	YES	Spanish	NO	8	16	12
Australia	8	YES	Australian English	NO	8	8	9
Austria	*	YES	German	NO	7	16	11
Bahrain	*	YES	Arabic	NO	6	16	6
Brazil	**	YES	North American English	NO	8	8	10
Cala	**	YES	Spanish	NO	8	8	8
Caribbean	**	NO	North American English	NO	7	7	10
Chile	8	YES	Spanish	NO	7	16	11
Columbia	8	YES	Spanish	NO	7	16	12
Czech	*	YES	Czech	NO	7	16	11
Denmark	8	YES	Danish	NO	8	8	11
Finland	8	YES	Finnish	NO	9	16	11
France	8	YES	Euro French	NO	7	7	14
Germany	8	YES	German	NO	7	7	11
Global	8	YES	North American English	NO	7	16	11
Holland	8	YES	Dutch	NO	7	7	11
Hong Kong	**	NO	North American English	NO	11	9	10
India	*	YES	United Kingdom English	NO	7	16	14
Indonesia	*	YES	United Kingdom English	NO	7	16	10
Ireland	*	YES	United Kingdom English	NO	7	16	10
Italy	8	YES	Italian	NO	7	7	11
Malaysia	*	YES	United Kingdom English	NO	8	16	10
Mexico	*	YES	Spanish	NO	7	16	10
New Zealand	8	YES	Australian English	NO	7	16	8
North America	**	NO	North American English	NO	7	16	10

Table 76 Voicemail parameters, by country (Sheet 2 of 2)

Market	Country Login Mailbox Key	Alternate QZ Mapping	Default Language	Enable Touch Tone Gate	Local Number Length	Maximum CLID Display	National Number Length
Norway	8	YES	Norwegian	NO	7	16	11
Pakistan	*	YES	United Kingdom English	NO	7	16	12
Panama	8	YES	Spanish	NO	7	16	7
Peru	8	YES	Spanish	NO	7	16	9
Philippines	*	YES	Spanish	NO	7	16	11
Portugal	8	YES	Portuguese	NO	7	16	9
Poland	*	YES	Polish	NO	7	16	11
POC	**	NO	Mandarin	NO	11	9	10
Qatar	*	YES	Arabic	NO	6	16	6
Romania	8	YES	German	NO	7	16	8
Russia	*	YES	Russian	NO	7	16	12
Saudi Arabia	*	YES	Arabic	NO	7	16	8
Singapore	*	YES	United Kingdom English	NO	8	16	8
South Africa	*	YES	United Kingdom English	NO	7	16	12
South Korea	*	YES	Korean	NO	7	16	10
Spain	8	YES	Euro Spanish	NO	7	7	11
Sweden	8	YES	Swedish	NO	8	8	11
Switzerland	8	YES	German	NO	7	7	11
Taiwan	**	NO	Mandarin	NO	7	7	12
Thailand	*	YES	Thai	NO	7	16	10
UK	8	YES	United Kingdom English	YES	11	9	11
United Arab Emirate	*	YES	Arabic	NO	6	16	8
Uruguay	8	YES	Spanish	NO	6	16	10
Venezuela	8	YES	Spanish	NO	7	16	9

ISDN line services

The table ISDN line services on page 293 shows the ISDN private network services that are supported by Avaya Business Communications Manager 50 (Avaya BCM50). The table ISDN services by Protocol on page 293 shows the network-based ISDN supplementary services and the features available for each.

Table 77 ISDN line services

MCDN over PRI (SL-1)	DPNSS	DASS2	ETSI QSIG
• Basic Call • DDI • Name display • Number display • Centralized voice mail • Camp-on • ISDN Call Connection Limit • Network Call Transfer • Break-in • Trunk Route Optimization (TRO) • Trunk Anti-Tromboning	• Basic Call • DDI • Diversion • Redirection • Centralized voice mail • Call Offer • Loop avoidance • Executive Intrusion • Three Party • Route Optimization	• Basic Call • DDI • Originating line identity (OLI) • Terminating Line Identity (TLI) • Call Charge Indication (CCI) • Call Charge Rate Indication (CCRD)	• Basic Call • DDI • Name display • Number display

Table 78 ISDN services by Protocol

Protocol	Market profile		Available ISDN services	
• NI	• Caribbean	• North America	• Basic Call • DID • Name display	• Number display • ONN blocking
• ETSI Euro	• Australia • CALA • Denmark • Germany • Global • Holland	• Italy • Norway • PRC • Spain • Sweden • Switzerland • United Kingdom	• Basic Call • DDI • sub addressing (on S-loop) • ETSI Call Diversion (partial rerouting)	• AOC-E (specific changes for Holland and Italy) • MCID • CLIP • COLP • CLIR
• HKTA2015	• Hong Kong	• Taiwan	• Basic Call • DDI • CLIP	• COLP • CLIR

Analog and digital trunk types

The table Analog and digital trunk types and descriptions on page 294 describes the types of analog and digital trunks.

Some of these trunk types are available only when you select specific market profiles.

Table 79 Analog and digital trunk types and descriptions (Sheet 1 of 2)

Trunk Types	Description
Digital Carrier Types:	
T1/E1	Digital line that carries data on 24 channels at 1.544 Mbps (North American); 30 channels at 2048 Mbps (Europe) Loop, E&M, DID and ground start lines are also versions of T1 lines. You can program autoanswer T1 loop start, T1 E&M trunks, T1 DID, T1 ground start trunks, PRI and IP trunks to map to target lines to provide for attendant bypass (calling directly to a department or individual) and line concentration (one trunk can map onto several target lines).
T1 Digital Trunk Types:	
DID	This is a type of T1 trunk line used by an outside caller to dial directly into a line on the Avaya BCM50.
Loop	This is a type of T1 line. Use this type of line on systems where the service provider supports disconnect supervision for the digital loop start trunks. These trunks provide remote access to the Avaya Business Communications Manager from the public network. This trunk must have disconnect supervision so you can set the trunk to autoanswer, which provides the remote access portal.
Ground	T1-groundstart trunk These lines offer the same features as loop start trunks, but use these lines when the local service provider does not support disconnect supervision for digital loop start trunks. Ground start trunks work with T1 only. By configuring lines as ground start, the system recognizes when a call is released at the far end.
E&M	T1 and E&M. Use this type of trunk line to create simple network connections to other phone systems. This trunk always operates in a disconnected supervised mode.
PRI	ISDN interface with 23 B channels and 1 D channel at 1.544 Mbps. These lines give you incoming and outgoing access to an ISDN network and are autoanswer trunks.
E1 Digital Trunk Types:	
DASS2	(British) Trunk provides multiline IDA interconnection to the British Telecom network.
DPNSS	You can use a digital private network signaling system to tie together phone systems from various manufacturers over E1 lines, offering significant enhancements to Avaya BCM50 networking capabilities. DPNSS makes it easy to support centralized network functionality within private networks for operators and attendants dealing with large numbers of calls. The routing capabilities provide more larger-network capabilities without the expense of installing a new system, reconfiguring all the nodes or incurring extensive downtime. Most functionality over DPNSS lines is transparent after you program the DPNSS into the system. DPNSS uses a local node, acting as a terminating node, to communicate with other PBXs over the network using E1 lines. For example, you can link corporate offices separated geographically over DPNSS lines to other BCM50 systems, bypassing the restrictions of the PSTNs to which they are connected. BCM50 systems can function like a private network using DPNSS.
R2MFC	Provides MFC-R2 (Multi-Frequency Compelled R2) signaling over an E1 trunk.
PRI	ISDN interface with 30 B channels and 1 D channel at 1.544 Mbps. These lines give you incoming and outgoing access to an ISDN network and are autoanswer trunks.
Other Trunk Types:	
BRI	The BRI loop supports both trunk (T-loop) and terminal equipment (S-loop) configurations. BRI provides two bearer B-channels operating at 64 kbits/s and a data D-channel that operates at 16 kbits/s. BRI uses the D-channel to carry call information. When configured as a trunk (T-loop), the BRI loop supports the following protocol variants: **NI-2**: Connects to the network's S-reference point and uses regular line pools. These trunks can be manual answer or auto-answer. **ETSI Euro**: There are two types of connections: The S-T type connects to the network's S reference point and uses regular line pools. These trunks can be manual answer or auto-answer. The T-T type connects to the network's T reference point and uses the Bloc pool type. These trunks are auto-answer. **ETSI QSIG**: Connects to the network's T reference point and uses the Bloc pool type. These trunks are auto-answer.

Table 79 Analog and digital trunk types and descriptions (Sheet 2 of 2)

Trunk Types	Description
IP	Provides H.323 and SIP trunking between Avaya BCM and PBX nodes.
Analog Trunk Types:	
Loop start	Standard PSTN telephone line.
ADID	An analog trunk that allows an outside caller to dial directly into a line on the Avaya BCM system. This type of trunk provides one way (incoming only) call service.

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